10GHz LNB with EXT OSC manual

This is a new version (MK3) of the Low Noise Block (LNB) with external reference and Bias Tee box with better filtered reference frequency using X-tal filters. Crystal filters are in both the Bias Tee box and the LNB. The result is better phase noise and output (IF) signal quality even when using a worse external reference signal source of 10MHz.

In addition to the Crystal filters, the new Bias Tee box includes a new diplexer to separate the IF and reference (25MHz) frequencies on a single coaxial cable along with a DC power supply for the LNB.

The box also includes surge protectors, a current Super-Fuse, a new electronic DC fuse, LED indication of switching from V to H polarization and a continuously adjustable variable Attenuator.

Applications

- special SAT experiments
- Starlink experiments
- University Ku band projects
- Coherent receivers
- QO-100 Es'Hail satellite
- TROPO 10GHz
- EME 10GHz
- SatTV DXing

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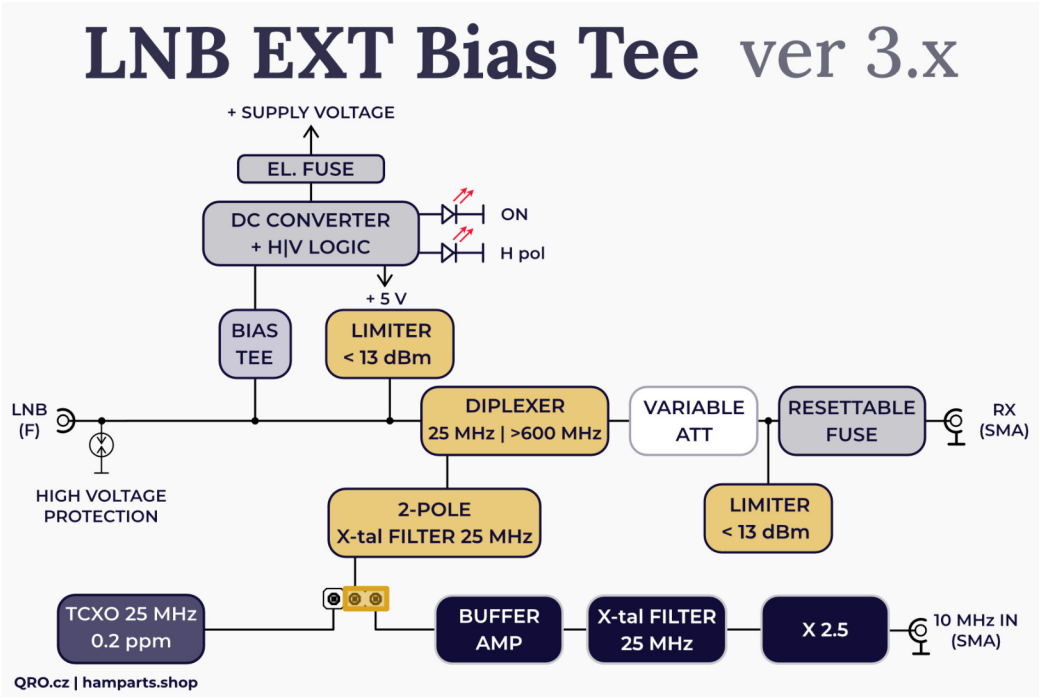
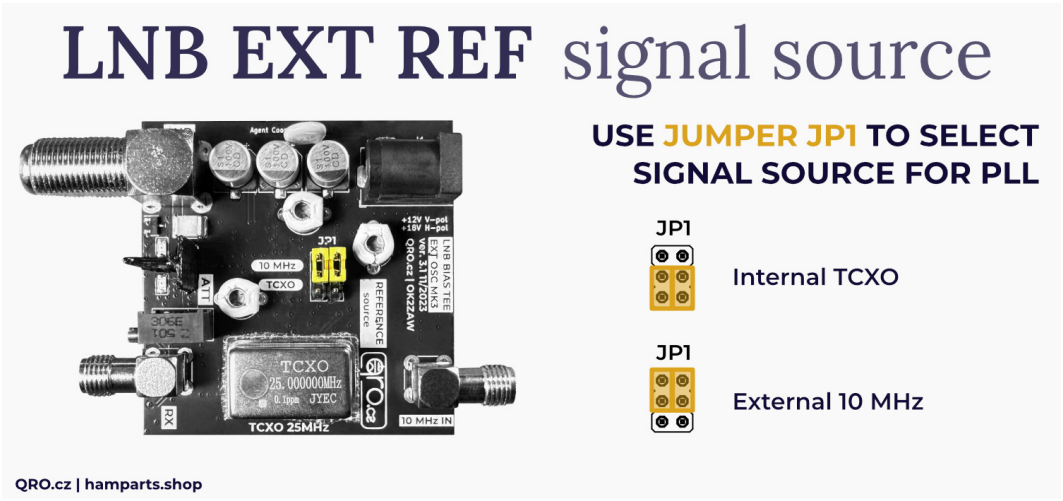
block diagram of the Bias Tee box

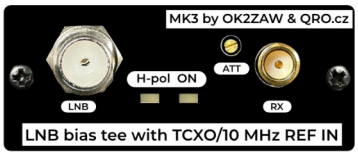


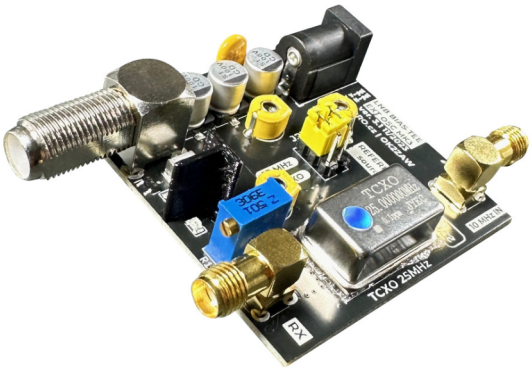
signal source external 10 MHz

⚠ **This is default preset configuration** - if you like to use TCXO, please open the box and reconfigure jumpers

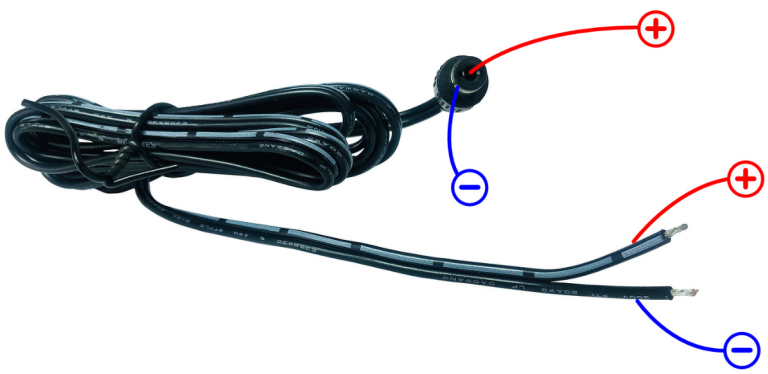


trimmer works as variable attenuator





power supply cable



Bias Tee LNB BOX

- small box works as DC Bias Tee, 25 MHz source for LNB, variable ATT and protections
- allows you to supply DC voltage and 25 MHz reference for PLL of LNB over one coax
- you can use internal TCXO with 0.2 ppm or some 10 MHz reference signal (you can select signal by the jumper JP1)
- you can switch H and V polarisation
- DC and RF protections!
- Variable attenuator! (blue trimmer works as variable attenuator)
- DC plug included

Poty dual band antenna adapter (in option)

- PETG UV stable material
- 22 mm Cu pipe size (use tape to waterproof it)
- POTY pipe WG fixed by M4 screw
- ONLY ADAPTER, 2.4 GHz antenna NOT included

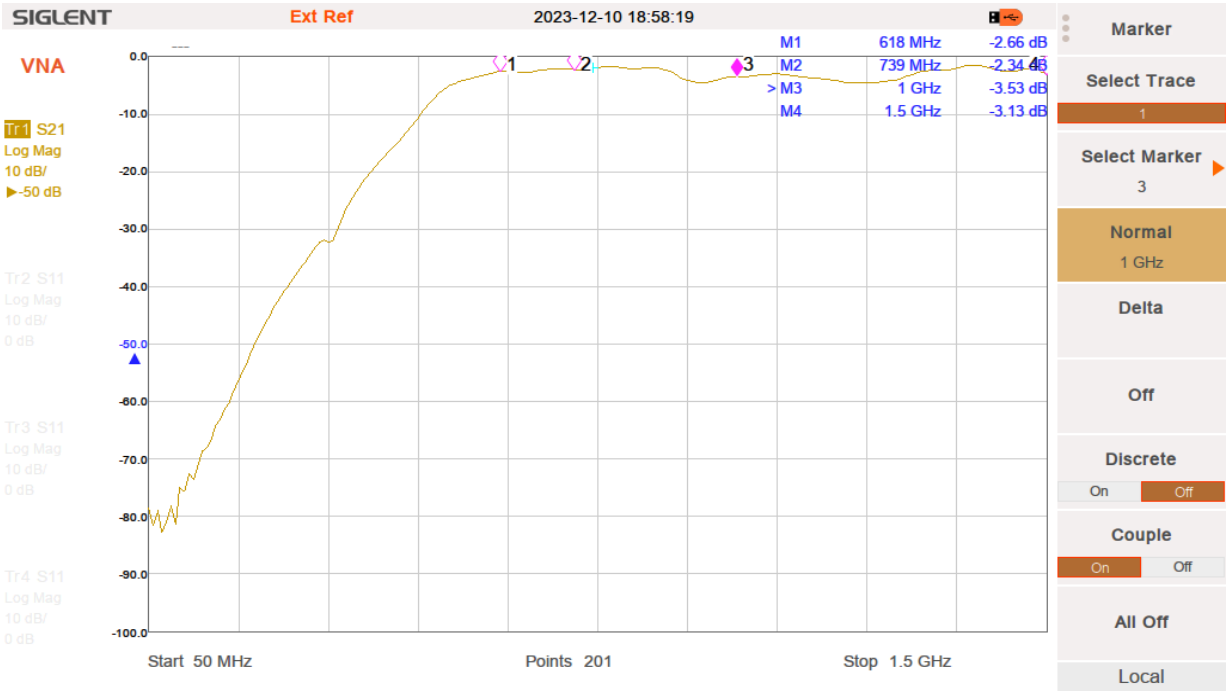
Technical Parameters

LNB local oscillator 9750 MHz (with 25 MHz source)
Conversion gain of LNB > 50 dB @ 700 MHz
LNB IF 739 MHz for 10489 MHz (QO-100)
618 MHz for 10368 MHz
Reference 10 MHz input power -3 dBm to +13 dBm
Stability with 10 MHz reference depends on reference source
Stability with 25 MHz TCXO (0.2 ppm) 0.2 ppm (X 390)
25 MHz cut off to RX output port > 50 dB
Frequency error with TCXO max 3 kHz, typ. less than 1 kHz (after 5 minutes)
DC power +12 V for Vertical polarisation (NB)
+18 V for Horizontal (WB)
Bias Tee IF loss typ. less than 3.5 dB to 2 GHz
Variable Attenuator on IF 0 dB to NO signal

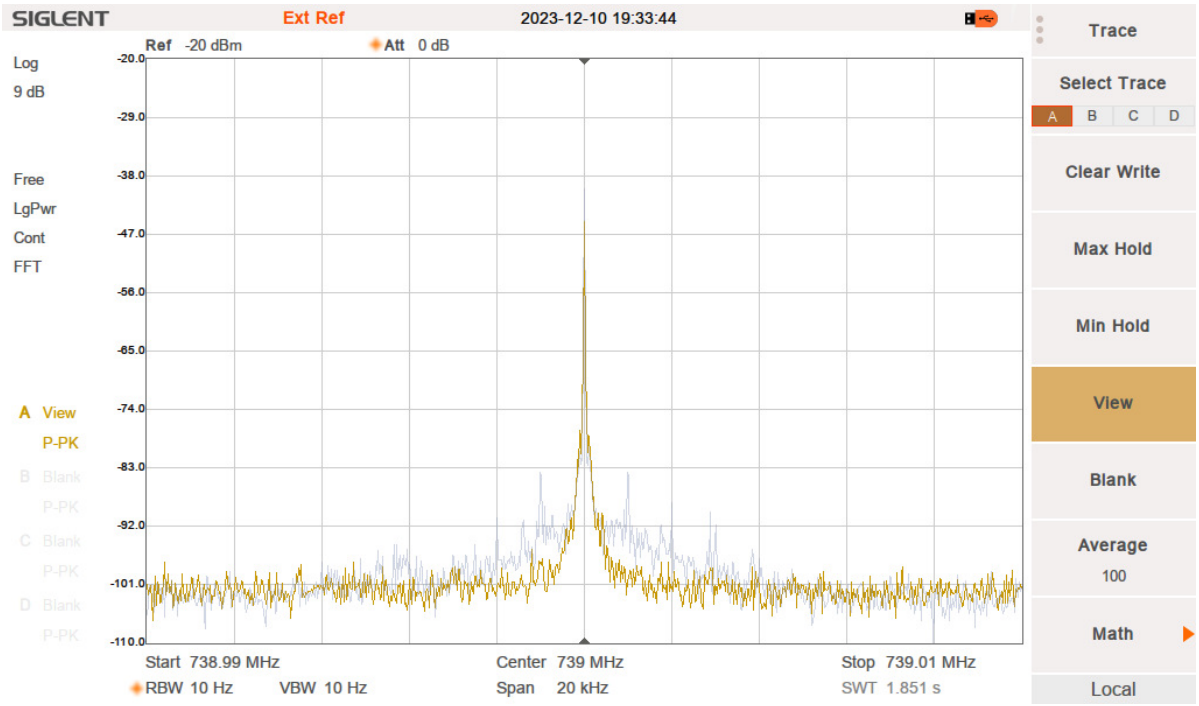
⚠ **IMPORTANT NOTE:** This Bias Tee box is designed for 10 MHz external reference source but you can also use internal 25 MHz TCXO, which is 0.2 ppm. Frequency error is max. 3 kHz.

⚠ **IMPORTANT NOTE:** Do NOT forget that the quality of the 10 MHz signal source has got final effect on the quality of the output signal. With added phase noise by PLL multiplying.

Internal duplexer (MK3) from LNB to RX



Difference of IF signal: older and MK3 version



Options: Recommendations to buy

GPSDO PLL

- 10 MHz reference source locked to GPS signal
- RF output typ +5 dBm
- HW by BG7TBL, modification by OK2ZAW
- including GPS antenna and DC power cable
- 3.5 mm jack with GPS data out
- including coax cable with BNC and SMA (about 50 cm)
- please be patience, GPS lock could take long time at first time, also depends on the GPS satellite count etc.

2-way small splitter

- small splitter for 10 MHz reference signal
- splits 10 MHz signal to Bias Tee box and another your device (SDR, TRX etc.)
- low loss 3.5 dB

RTL-SDR receiver with 1ppm TCXO

- RTL-SDR USB receiver
- in metal box
- 1 ppm TCXO for better stability
- input SMA connector
- firmware already installed
- 8 bit, up to 2 MHz of spectrum
- compatible with HDSDR, SDR console etc.

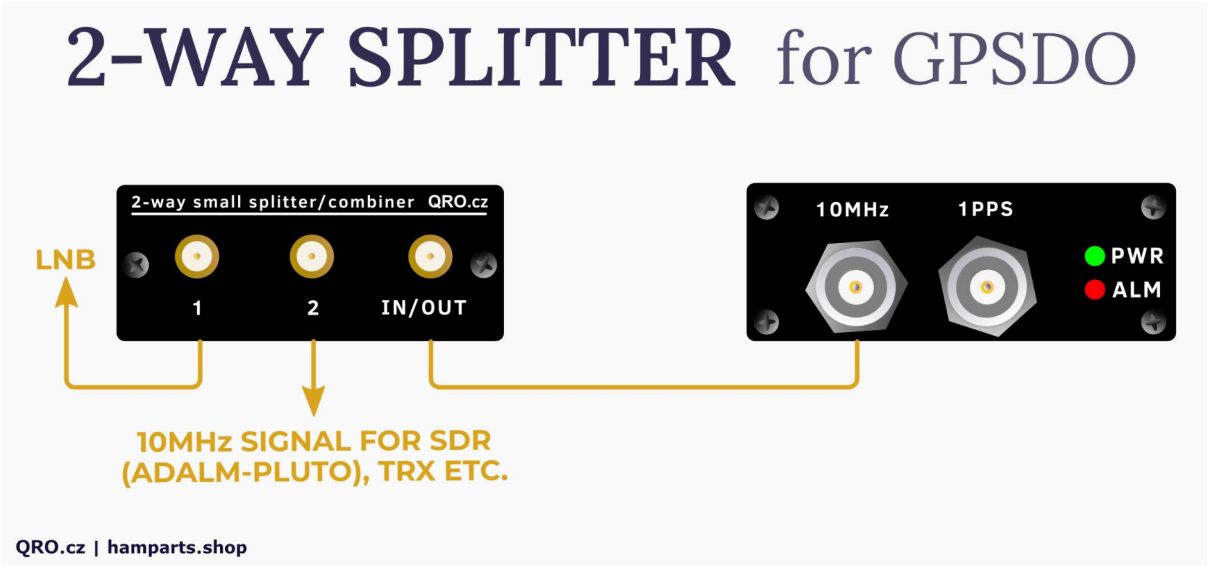
Adalm Pluto

- SDR TRX up to 6 GHz

SMA-SMA cable

- SMA male & SMA male pigtail
- about 15 cm (total length 17 cm)

2-way splitter box with 10 MHz GPSDO



Included in package

LNB and Bias Tee assembled and tested
POTY adapter (version with POTY)
DC plug - image
4pcs self adhesive feet pads - image