The antenna system described here allows the reception of the 10.5GHz downstream channel via an SMA connector to a converter or LNB, on a single dish.

Claude F1FY realized an adaptation to directly receive the 10GHz band with a machined OCTAGON OSLO head, while preserving the same principle of the double antenna, without having to go through a connection cable to a converter or LNB.
Instead of one polarization, both are available with this new design.

Figure 1 F1FY adaptation

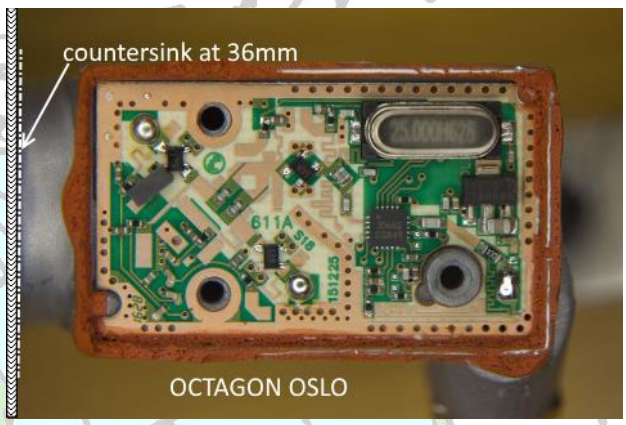

Figure 2 Open LNB OCTAGON OSLO

Machining

The LNB will be released from its plastic protection.

DO NOT OPEN the lid.

A 36 mm drilling from the end of the original horn allows the addition of an ϕ 22 / 24mm guide tube (see Figure 2).
This guide will be secured thanks to two 3mm dia. 40mm long screws (see Figure 1 F1FY adaptation).
The dimensions are given in the drawing Figure 3 achievement figures.

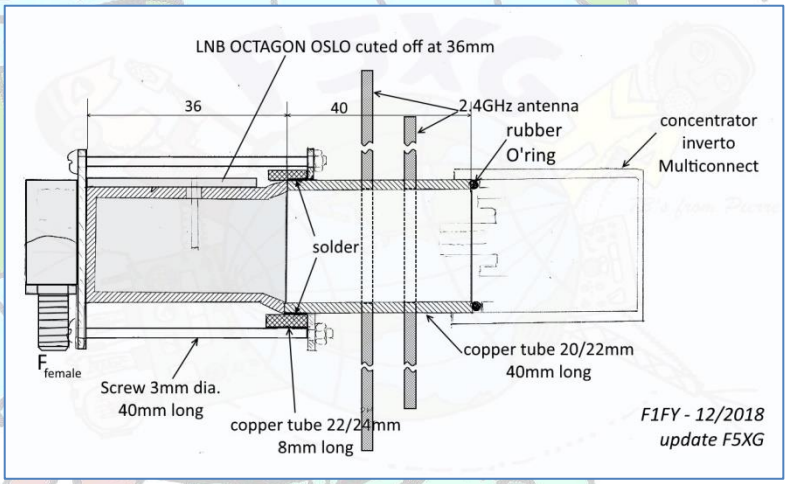

Figure 3 achievement figures

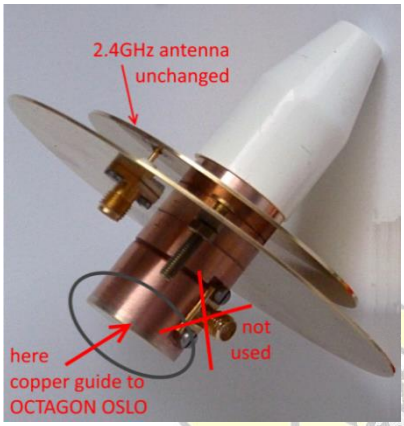

Figure 4 Changes

The principle

The SMA socket and the back cap of the 10 GHz guide are useless.

We replace this guide by a guide tube 20/22 length 40mm.

The results of the measurements in the lab, give the same performances on this adaptation as with the initial principle.

Figure 5: The new set Duo completed

Figure 6: Duo in a 100mm housing

Figure 7: Radom protection

Measurements

Claude has plotted the amplitude-frequency curve of the OCTAGON OSLO LNB with PLL compared to a conventional resonator LNB (DRO).

By design there is an additional gain ~ 10 dB on the OCTAGON LNB at 10.5GHz.

The IF is 10489.55-9750 = 739.55MHz, so not receivable for the SSB on our conventional transceivers.

A simple converter can convert this IF to 435MHz.

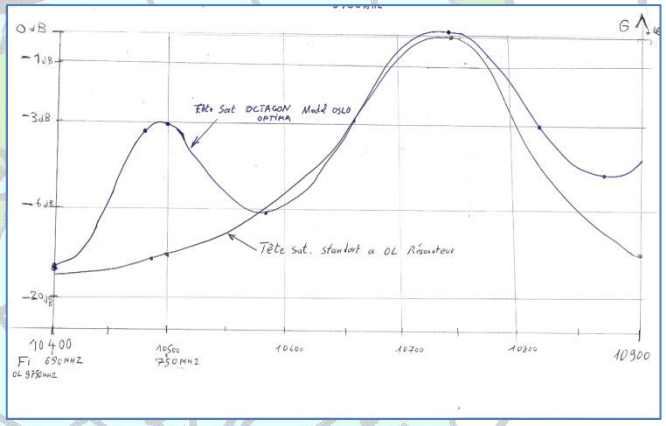

Figure 8 : Gain comparison OCTAGON vs standard DRO LNB

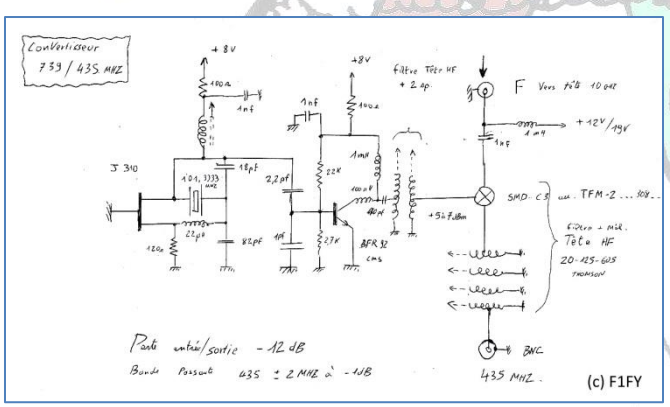

Figure 9: Converter 739/435

Description

The couple J310-BFR92 constitute the local oscillator at 304MHz.

A conventional mixer type MD108 / SBL1 / TFM2 converts this signal to 739.55- ~ 304 = 435.55MHz

Filters are mandatory.

Attention

The LO of LNB although being PLL is not exactly at 9750MHz.

It will be necessary to check this point after ~ 1 / 4hour of LNB heating, by listening to the band limit beacon.

The new converter project using Murata SAW filters (no need of VNA or so on)

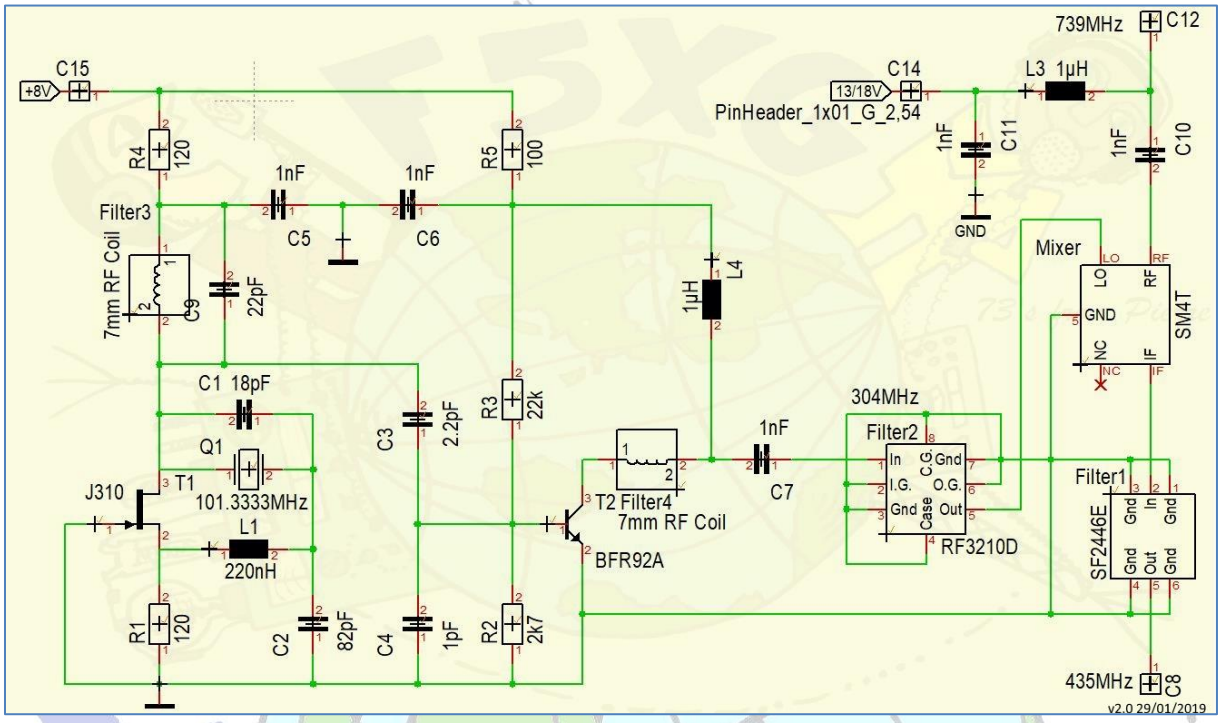

Figure 10 New converter v2.0 & SAW filters