

# THE EDVIS PHASE LOCKED AM & IF FILTER BOARD FOR THE NRD 525

## An user's review

by Rafael Calabuig

### GENERAL

The NRD 525 is an excellent receiver and some of the major parametres like dynamic range, selectivity and sensitivity are top class, but this in many ways fine receiver has the following drawbacks :

1. Severe wideband noise, noticed as a hissing sound on weak stations.
2. Very poor AGC performance, the AGC overshoots and causes distortion of the received signal.

The EDVIS Phase Locked AM & Filter Option board for the NRD 525, limits the reception bandwidth at the end of the IF stage, to the actually received bandwidth. This improves the signal to noise ratio with up to 10 dB, which means that the "hissing" sound totally dissapears, and the readability of weak signals improves considerably.

This option board also contains up to 4 filters, cascode coupled with the original filters of the NRD 525, which improves the overall selectivity in a noticeable way.

The NRD 525 is originally equipped with an synchrone AM detector, which improves the reception of AM signals, when there is fading, but this detector does not eliminate the distortion, which occurs during selective fading periods (when the carrier drops in strenght, in respect to the side bands), and this detector does not allow ECSS reception.

The Phase Locked AM circuitry of the EDVIS board receives the AM signal in the LSB or USB mode, and locks the carrier of the AM signal to the BFO (Beat Frequency Oscillator) of the receiver. In this way the selective fading distortion is eliminated.

Phase Locked ECSS (Exalted Carrier, Selective Sideband) is now possible, by switching to resp. USB or LSB, and altering the passband tuning control of the receiver for the best audio quality, with least distortion and interference, (in this mode the audio bandwidth = the IF filter bandwidth).

In this way the audio quality, without the hissing noise, and without selective fading distortion is really superb, and one can select the sideband, which has the least interference.

### INSTALLATION

The EDVIS board fits inside the slot for the V-UHF board, and the installation involves the soldering of a flatcable to the IF filter board and two coaxial cables to the IF-AF Amp. board.

Both the flatcable and the two coaxial cables are fitted with plugs, which are plugged into the EDVIS board.

On the mother board of the NRD 525 have to be soldered two cables, which are provided with the option. The installation is straight forward and is described clearly in the installation manual, but requires solder experience. If you have no soldering experience, you have to get assistance from some one who has, or contact your radio dealer.

The total installation can be done within one hour.

### OPERATION

The filter section of the EDVIS board is always in operation, and the "hissing" sound is gone.

By pulling out the Noise Blanker control knob, the Phase Locked AM mode can be selected, when the receiver is in the USB or LSB mode. The Noise Blanker control function remains the same as before.

Optimal reception of a station can be archieved, by selecting the sideband with the least interference (USB or LSB), selecting the maximum bandwidth possible without interference and by turning the passband tuning control for the highest audio quality.

### QUALITY

The quality of the EDVIS board is excellent and it looks similar to the other boards used inside the NRD 525.

### AGC MODIFICATIONS

The AGC of the NRD 525 has the following shortcomings :

1. The attack time is much too fast, short electrical noise pulses cause the AGC to react and "deafen" the receiver.
2. The AGC is "overshooting".
3. In the FAST mode, the AGC is useless on both AM and SSB, as the AGC response time is too fast.
4. AM modulation appears on the AGC line, and causes distortion. This is specially noticeable in the Phase Locked AM mode (Phase Locked ECSS).

EDVIS offers a modification kit, to overcome these problems, this kit consists of two "finger nail" size SMD boards (SMD = Surface Mounted Devices).

Installation of the boards is quite simple, but also requires soldering skills and should not be attempted by some one without soldering experience.

The installation of the AGC kit can be done in 15 minutes, if you are not able to install it your self, you should consider professional assistance, which should not be so expensive, as the total installation time for the Phase Locked AM & Filter board and the AGC kit, will be slightly over one hour.

**CONCLUSION**

**ADVANTAGES :**

1. The EDVIS Phase Locked AM system locks very nicely (the lock range is about 30 Hz on each side of the carrier), and this system works according to my opinion much better than the SONY 2001D synchrophase AM detector. The lock is retained, also when the carrier of the station fades considerably. Real "Phase Locked ECSS" reception of AM stations is possible with this system.
2. The sound quality and the reception of weak stations is very much improved. "HIFI" AM reception is now possible on many medium - and shortwave stations.
3. The "hissing" sound and the distortion, which occurs during selective fading are eliminated.
4. Overshooting and distortion, caused by improper operation of the AGC have been cured.
5. The overall selectivity has been very much improved, and several filters, with different bandwidth are available, also for direct installation on the original IF board, on the NARROW and AUX positions.
6. The Noise Blanker function has been improved, because of the AGC modification.

**DISADVANTAGES**

1. The installation of the EDVIS board, makes it impossible to use the VHF/UHF converter.
2. The installation of the EDVIS board and the AGC modification kit, requires soldering skills.

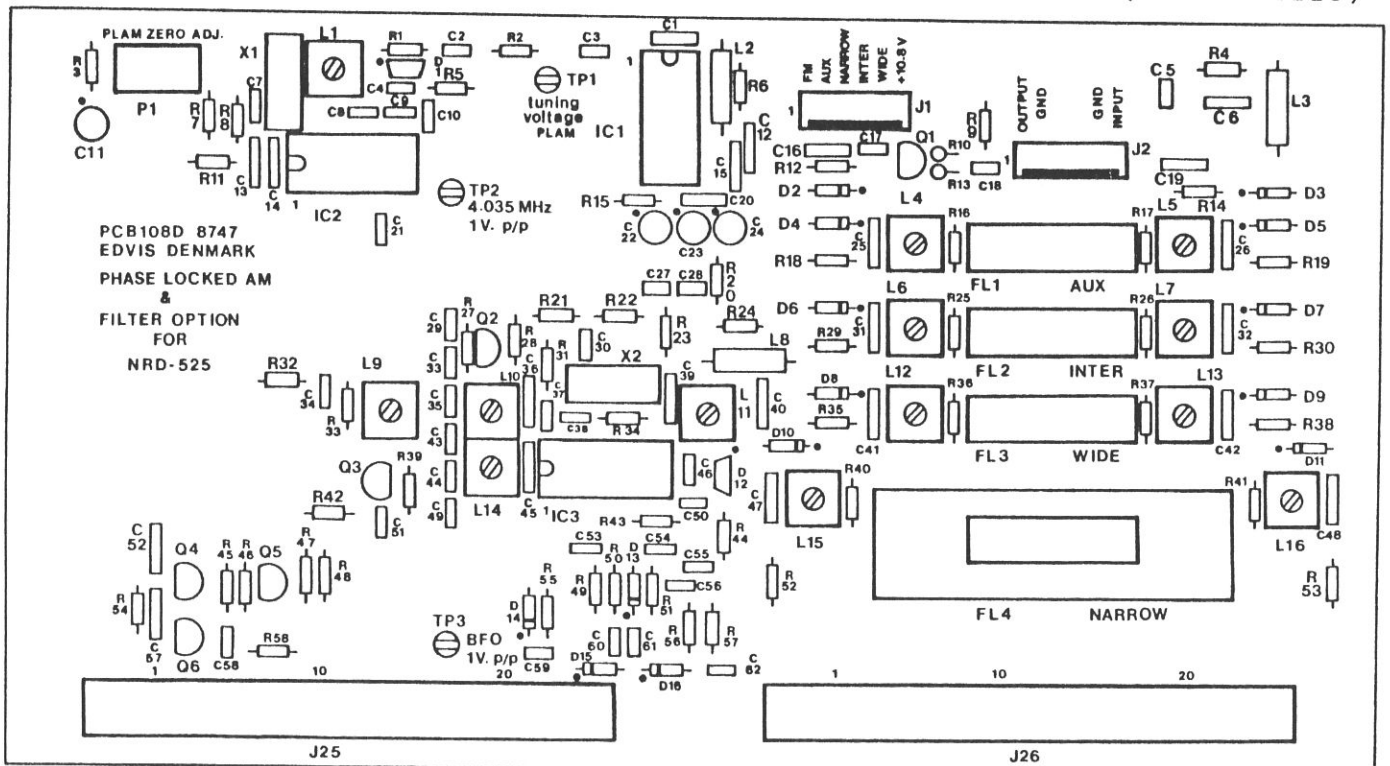
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**Component layout of EDVIS Phase Locked AM & Filter board (actual size)**



# E S K A B

## ALIGNMENT INSTRUCTIONS FOR THE ESKA PHASE LOCKED AM & IF-FILTER BOARD

**Potentiometer P1:** in the middle

**PLAM switch on/off:** check the collector of Q4, on 10 VDC / off 0 VDC

**Connect a scope to TP 2,** PLAM on, align to maximum with L10 & L14  
(coil with green core) (1 to 1.5 volt peak to peak)

**Connect a scope to TP 3,** PLAM on, align to maximum with L9  
(BFO 1.5 to 2.0 volt peak to peak)

**Connect a scope to TP 1,** PLAM on, choose a wellknow local AM station and  
align L11 & L1, approx. locking range 70 Hz  
LOCK approx. 4 volt.

**Filter section:** LSB on, set radio to 1.5 KHz, align coils for WIDE,  
INTER, NARROW & AUX for maximum S-meter reading.

### Additional information:

R2 is limiting the locking range it should be 8.2 Kohm for 10 ppm crystals  
used in production after serialnumber 100. The 10 ppm crystals are marked  
3.58 MHz.

### Errors known:

**Upon installation,** static discharge can "blow" the SO 41P IC's.  
(3 cases on 250 options)

**In production,** L3 and L8 can easily break and should be handled with care.

NRD 525: typical sporadic error 6 cases known

Something breaks on the CGA-132 loop board. Symptom, the squelch  
indication is shown on the display, no reception is possible. Upon  
knocking on the edge of the board squelch turns off and the receiver works  
like normal again.

Poor contact in the AC fuse holder on the rear panel, sporadic loss of  
AC power, radio turns off.