

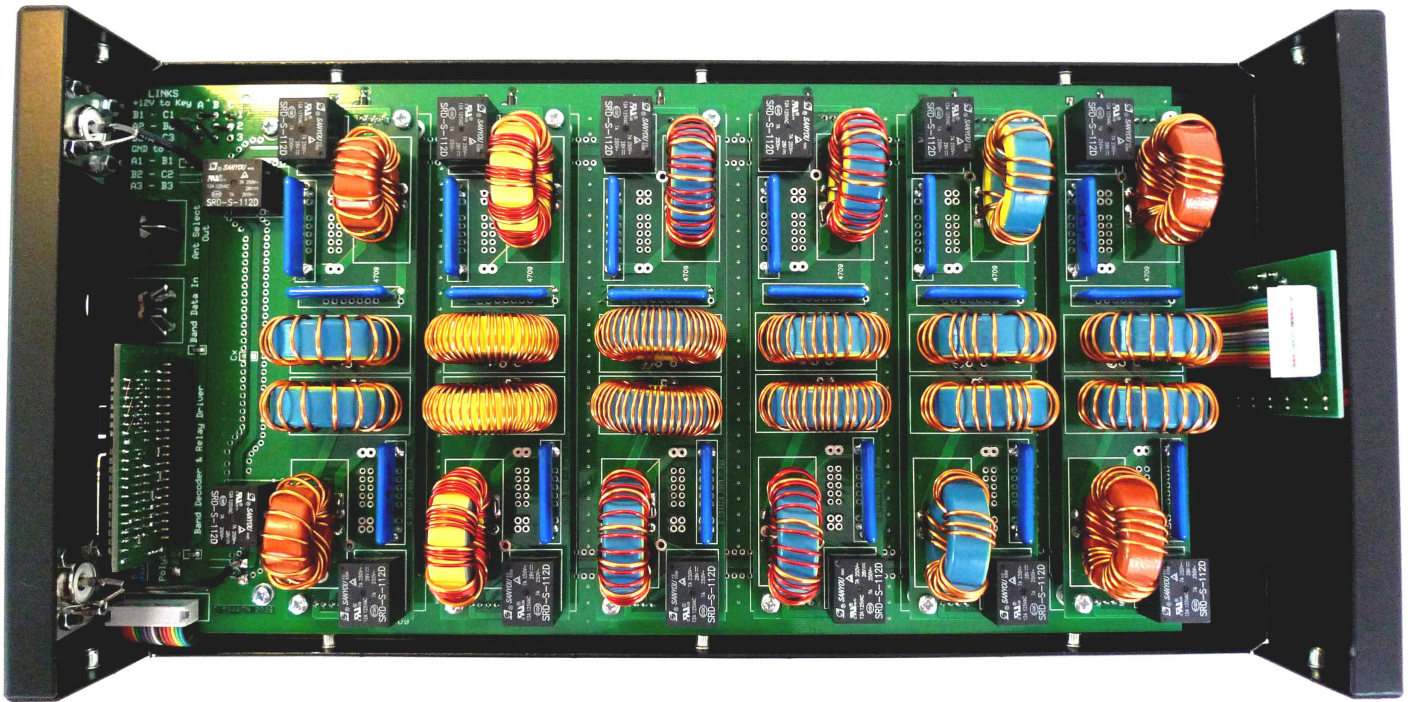
Six-band Transmitting Band-pass Filter

With plug-in band decoder & antenna relay driver module



The unit may be directly controlled using Yaesu & Elecraft K3 band data output or with band line output from Ten Tec Orion and Orion II. Antenna selectors such as the Array Solutions Six Pak may be driven directly via the Antenna Relay Driver 8-way DIN socket.

The unit measures approximately 193mm wide x 63mm high x 410mm deep. It weighs 2.4kg.

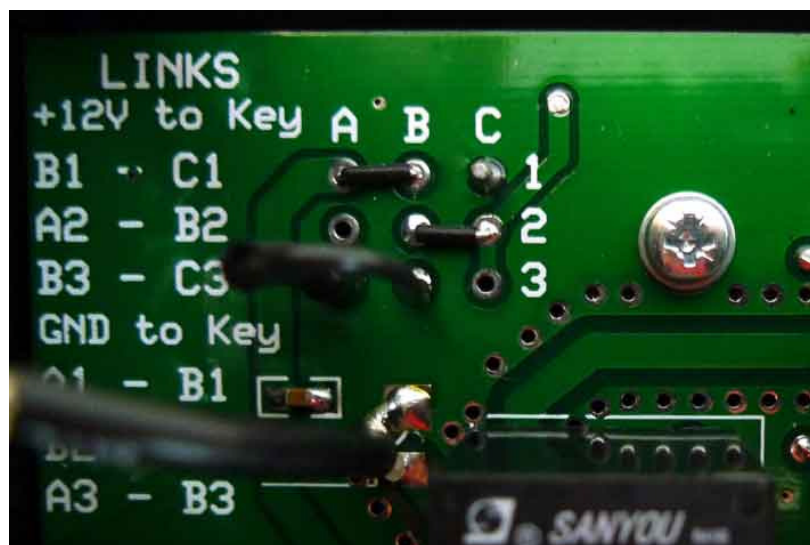


Band-pass Filter unit shown with top cover removed to reveal six plug-in filter modules.

The unit is compatible with 200W SSB/CW transceivers operated at 50% transmit duty cycle into a good SWR. As SWR increases, so too do the voltages and currents within the filter. Operation of the unit at the extreme of its power handling capacity into a poor SWR may cause component failure.

The order of filters from left to right above is 10, 160, 80, 40, 20, 15m. If filters are removed they must be replaced in the same order to maintain proper operation. Filter locations are identified by band on the motherboard silk screen layer beneath each filter.

At the top left of the above picture is a 3x3 link matrix. A close up is shown below.



Links A1–B1 & B2–C2 are soldered in, while the link attached to B3 has at its other end a small socket connector. As delivered, B3 is connected to A3; this provides a direct by-pass path through the unit when no filter is selected, for example when the controlling transceiver is set to a WARC band. For use in single transmitter installations this is the recommended setting.

This setting may not be appropriate in a multi-transmitter installation, as when the controlling transceiver is switched to a WARC band, no BPF will be in circuit. This may expose the RX front-end to destructive levels of RF emanating from other co-located transmitters. In multi-transmitter contest installations B3 might better be linked to C1. When so configured, a transceiver switched to a WARC band will see an open circuit rather than a by-pass, so protecting it against the risk of RF damage. Note that a +12VDC supply must be connected to the BPF unit in order for the by-pass path to open circuit, as when power is removed the unit defaults to by-pass.

The Band Decoder & Antenna Relay Driver plug-in can be seen towards the bottom left hand corner. Note the orientation of this PCB. Be sure to re-install it correctly, should it need to be removed at any time. The plug-in may be configured to provide current sourcing or current sinking antenna relay drivers. Changing from one configuration to the other requires replacement of two on board links and one plug-in driver chip. Full details are silk screened onto the face of the plug-in PCB, such that you will have the required detail in front of you should the requirement to reconfigure arise.

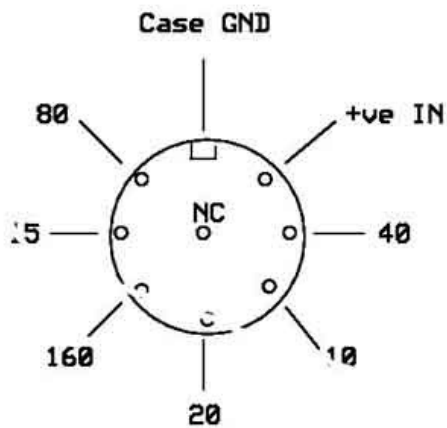
The front panel provides a manual control of filter selection. When used under transceiver control the rotary switch should be set to the auto select position. Failure to do so will cause multiple filters to be selected. The manual switch can be disabled if required. A link is provided on the back of the switch module for this purpose.

The rear apron provides home to the BPF connector set as illustrated below.

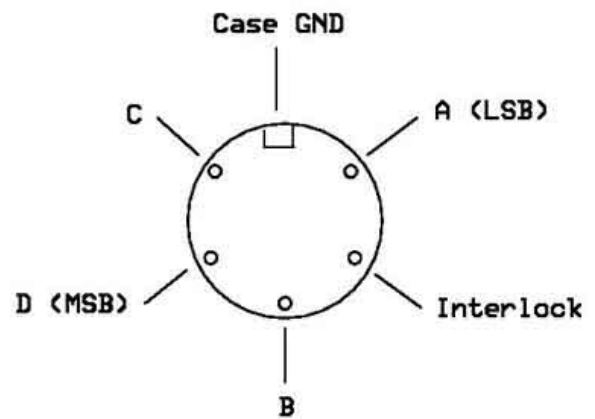


The two SO239 connectors provide the RF path. As the filters are bi-directional, either may be used as input or output. Also on the rear apron is a DC input socket which requires connection to a 12VDC supply. The centre pin is the +ve connection. In addition you will find a 5-way DIN socket for BCD Band Data input, an 8-way DIN socket providing 6 antenna relay driver outputs and a DB9M connector for band line I/O where required. Pin assignments for these connectors are set out in the following table.

Antenna Relay Driver Socket



Band Data Input Socket



View looking into the 8-way & 5-way DIN sockets on BPF rear apron

Equivalent view to that when soldering wires to the pins of the matching plugs

DB9 Pin out:

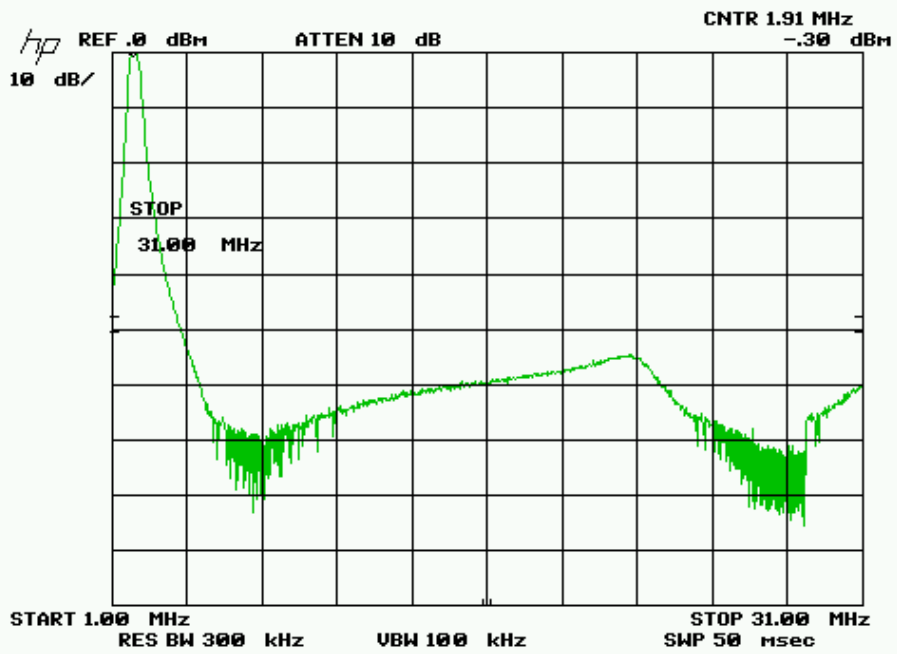
1	160m	6	10m
2	80m	7	GND
3	40m	8	NC
4	20m	9	+12V
5	15m		Shell shield

Transceivers providing BCD band data (Yaesu & Elecraft K3) may control the unit via the 5 way DIN connector. Transceivers providing current sinking band line outputs, (E.g. Ten Tec Orion or modified Kenwood) may control the unit via the DB9 connector.

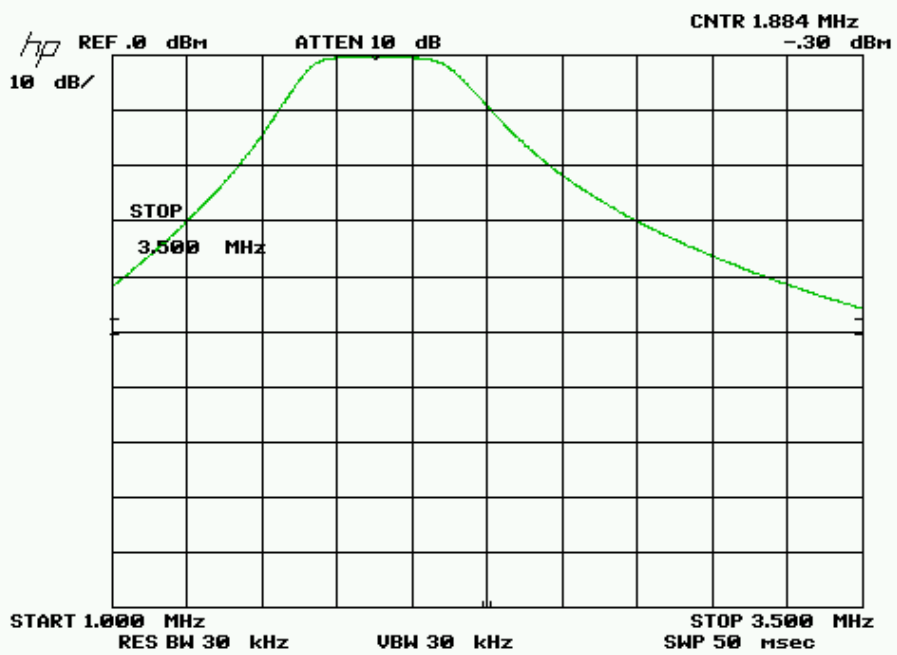
When antenna select relays are controlled by the unit their +ve supply should be connected to the pin marked +ve in on the 8-way DIN connector. The absolute maximum voltage to be applied is +50VDC at 0.5A. This rating provides for use of increased voltage to counter line loss where outdoor antenna select relays are located at the end of a long cable run.

Connection of antenna relay +ve is worthwhile, even when current sinking drivers are used. This will ensure the back EMF quench diodes internal to the driver IC are connected across antenna relay coils.

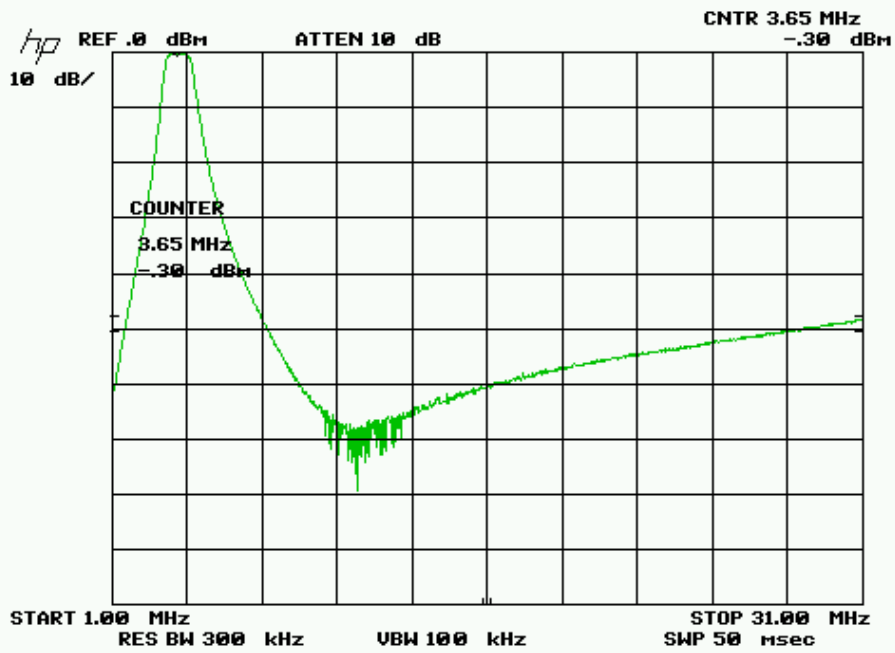
The following pages contain typical wide and narrow Spectrum Analyser plots for each filter contained within the unit. The narrow sweep widths have been set in order to clearly illustrate adjacent band rejection. Vertical graticules are 10dB.



160m wide sweep



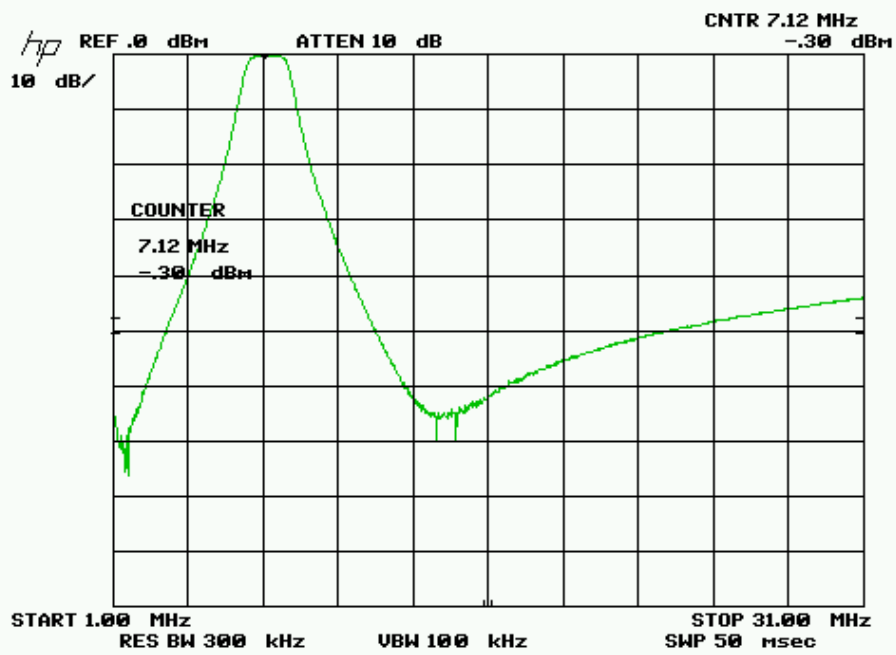
160m narrow sweep



80m wide sweep



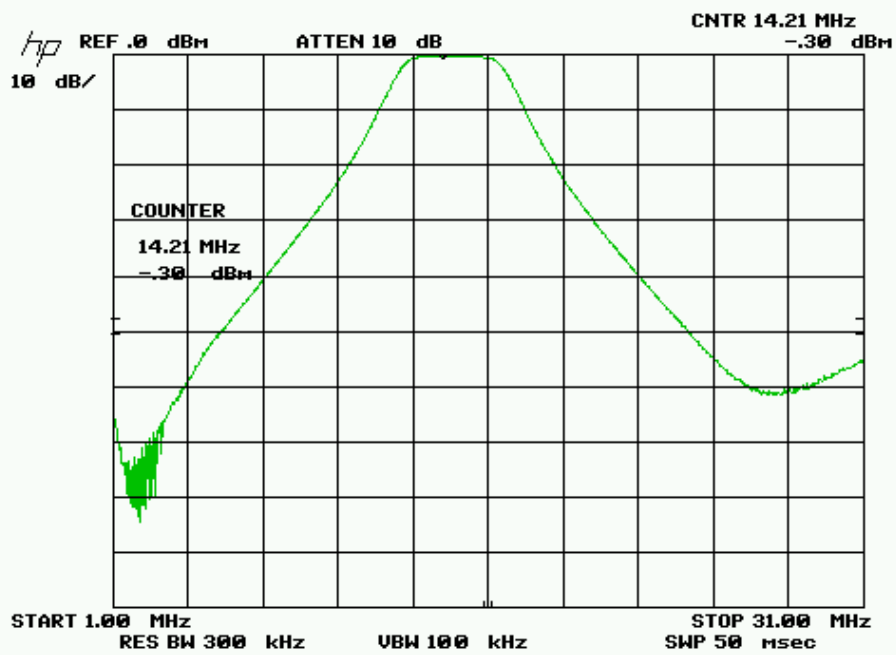
80m narrow sweep



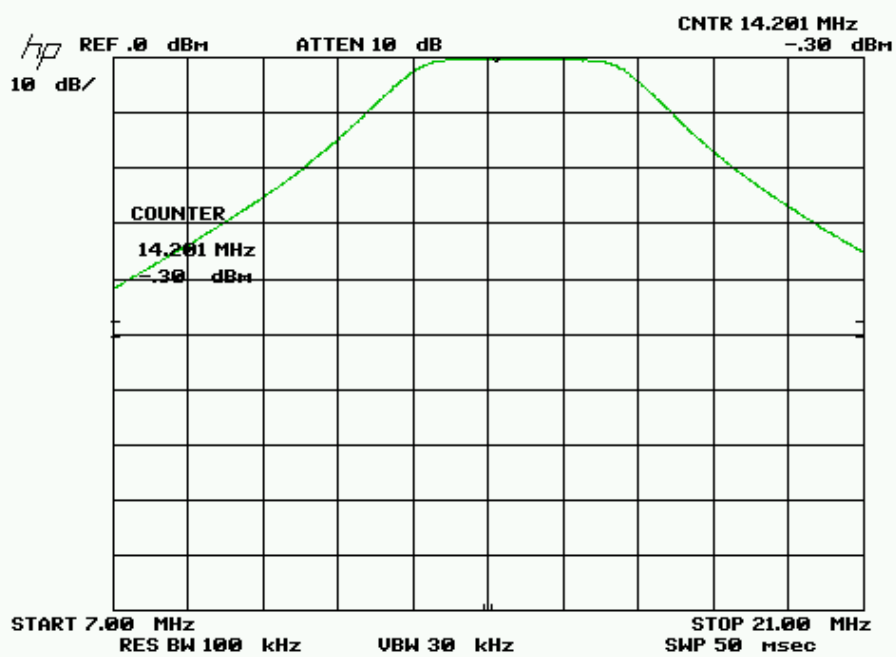
40m wide sweep



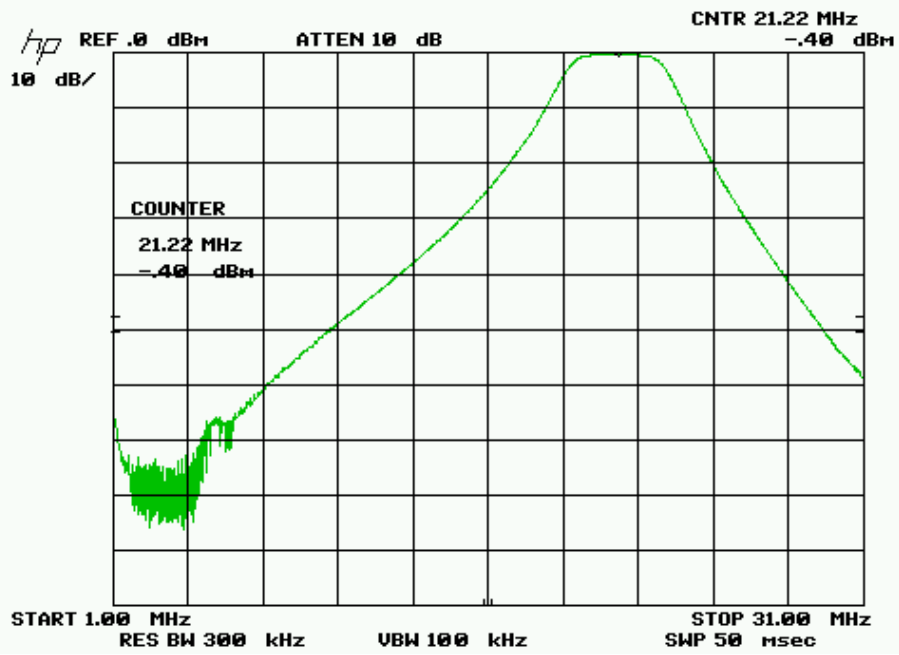
40m narrow sweep



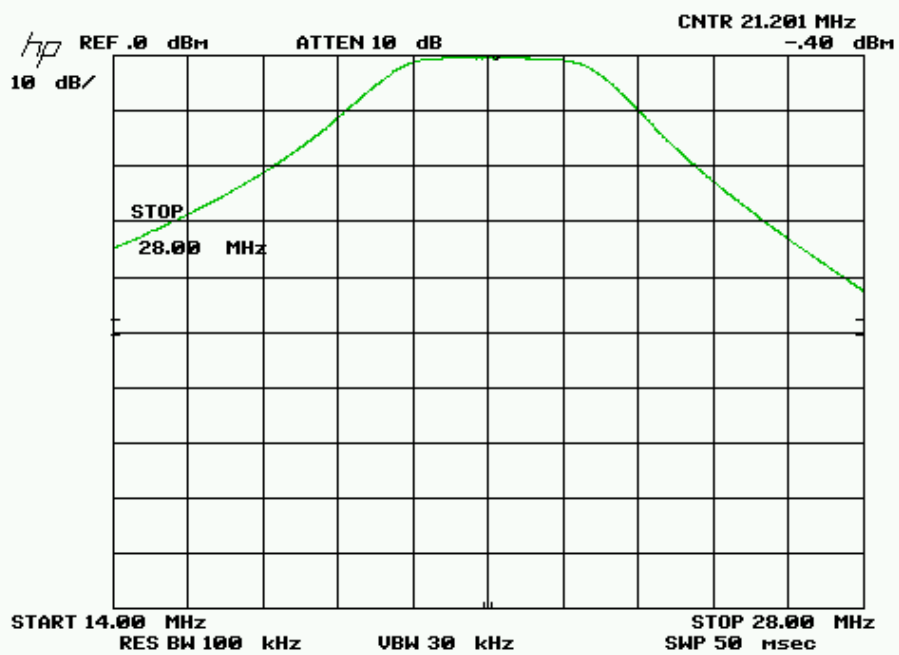
20m wide sweep



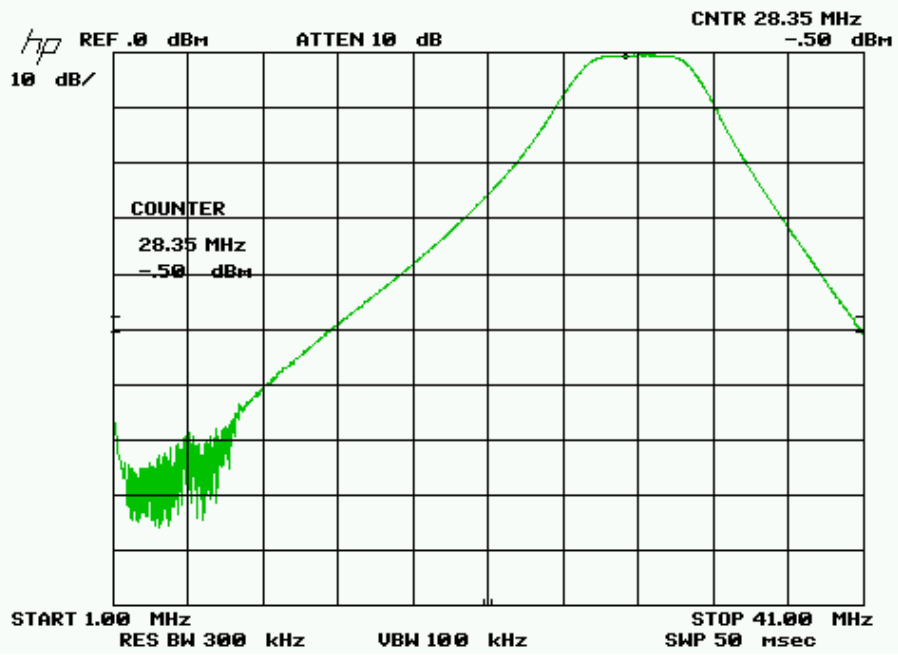
20m narrow sweep



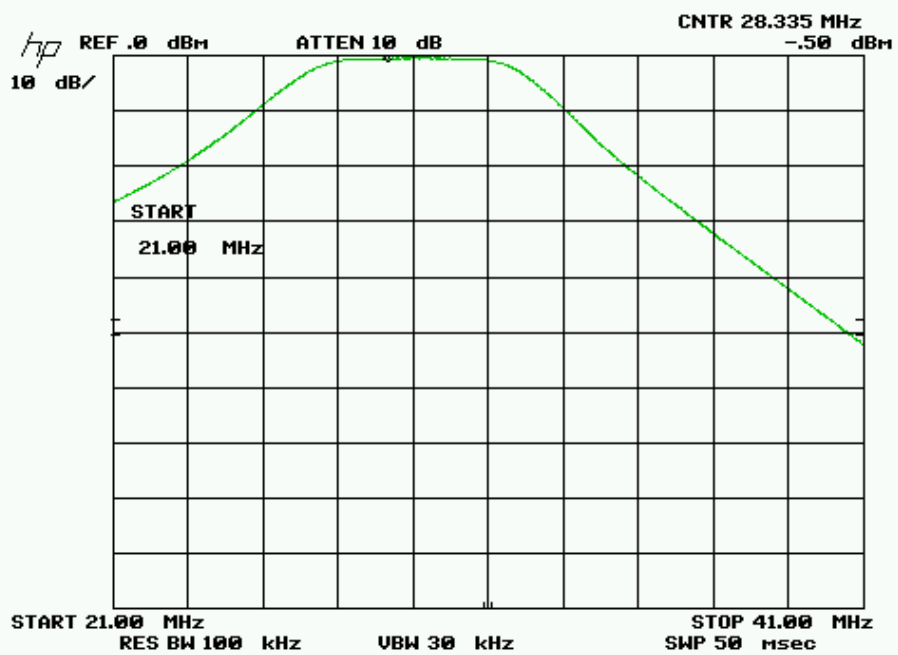
15m wide sweep



15m narrow sweep



10m wide sweep



10m narrow sweep