

# A DXER'S LOOK AT THE NEW DYMEK FC-11 FOG CUTTER

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## AUDIO FIDELITY

Audio fidelity should be every DXer and SWL's obsession. Whether we are focusing every neuron to hear a station at threshold level audio or simply relaxing with the BBC, we all need to hear what is coming our way as clearly as possible.

Unfortunately, neither receiver manufacturers nor the hobby press seem to focus on audio fidelity as a serious issue in shortwave receiver design. Manufacturers seem to leave design of the audio stage to a last minute low budget afterthought. Particularly in AM mode, we are faced with audio that is usually too bassy, often strangely muffled and distorted and often accompanied with some level of circuit hiss. The NRD 525 is notorious for the latter, while the former is most noticeable from ICOM and some Kenwood products. I thought that my NRD 525 had "reasonably good" audio until I put it side-by-side with a good tube receiver. The amount of hiss to which my 525-trained ears had become accustomed was unbelievable! Even though my brain wasn't hearing it, the hiss was masking useful audio information. If you think that your solid state receiver has "reasonably good" audio, put it next to a good tube receiver and find out how much audio you have been missing.. You will probably be as shocked as I.

## ACTIVE DEVICES

There are several active devices that will improve the audio performance of communications receivers. Many of us have tried the so-called stereo "graphic equalizer" that allows control of about plus or minus 12 dB of change in 6-10 audio frequency ranges. Since 12 dB is too little to affect hets and splatter much, few DXers remain satisfied with this device for long.

A second family of devices to improve audio fidelity is active audio filters. The best of these devices are excellent het removers and have some effect against hash and other repetitive noises. They are especially useful with receivers lacking effective IF Notch and/or Pass Band Tuning. Even though some of these devices allow some shaping of the audio spectrum, I have never used one that noticeably "clarified" or made the speech audio more intelligible. The other negative aspect to top-of-the-line active filters is their \$300-\$400 price!

A third type of device available to improve the audio of communications receivers is the MAP Unit by Kiwa Electronics. The MAP is a unique device that allows the user to "clip in" to any receiver with 455 kHz IF. When clipped in, the MAP temporarily replaces most or all of the receiver's IF section, detector and audio amplifiers. This device improves audio fidelity and intelligibility of speech remarkably. It has done so on every receiver that I have coupled to it. Unfortunately, this highly sophisticated device also sells for nearly \$400 US.

## THE DYMEK FC-11 FOG CUTTER

The Dymek FC-11 Fog Cutter is a *passive* audio filter or processor working in-line between a receiver's headphone jack and/or external speaker and your headphones or external speaker. It is powered only by the radio's audio circuit and requires no batteries or other external power source. The FC-11 has been in development by Inline Components and Stoner Communications (the Dymek people) for about two years. I was fortunate enough to be loaned a pre-production prototype to test.

The FC-11 is a deceptively simple device about the size of a thick paper-back book and has but a single six-position knob on top. The rear panel sports two RCA-type jacks. One is for input from the receiver, and the other for output to an external speaker. There is also a headphone mini-jack.



My version of the operating instructions is also simple: "Place this device in-line between the receiver and your low impedance speaker or headphones. Turn the radio on and adjust the volume to a comfortable level. Twist the knob a few times to discover that of the six knob positions provides the best audio. Enjoy!" That's it. Utter simplicity! Several DXers have tested the FC-11 using (very unusual) NRD high impedance headphones. Because of the nature of the L-C circuits, the device MUST be used with (normal) low impedance phones or speakers.

## A LOOK INSIDE

Inside, the Fog Cutter is very simple. Electrically, it is a collection of various sized inductance-capacitance (L-C) circuits each selected in turn by the six position switch. As I understand it, these circuits work much like the L-C traps on a "trapped dipole" antenna, passing through certain audio frequencies and blocking/attenuating most others. Each circuit has different capacitance and each has a different coil selected from a collection wound around a gigantic (3"dia.) ferrite toroid core. The secret of this remarkable device is the selection of the exact values of L and C!

Five of the six switch positions each engages a different combination of coils and capacitors. (The 1st position is Bypass). The values of these switch-selected combinations of L and C are chosen to pass through a carefully selected but somewhat different range of those audio frequencies most important to speech intelligibility. Most good active audio filters give you the choice "High Pass" or "Low Pass" audio filtering as well as an "Audio Notch." I think that the secret of the FC-11's success is that it is a "Middle Pass" device, attenuating both high and low frequency audio to varying degrees.

In general, the most audio processing is found in the central positions of the switch (positions 3 and 4); however, each position yields a unique audio profile. I find that one of the "maximum" settings usually yields the most intelligible speech on very weak signal DX. When listening to strong signals, one of the lesser settings (positions 5 and 6) eliminates the 525's hiss and produces much improved audio. It is likely that different receiver designs (the R-71A, the R-5000, etc.) could find slightly different switch settings may be more effective.

## JUST HOW GOOD IS IT?

For both testing and normal use, I hooked the FC-11 in-line between the External Speaker port on the 525 and the Receiver Audio input on the MAP Unit (Version 1.0). The MAP has an "A/B" switch that allows you to hear the MAP operating (A position) through its internal speaker and (B position) simply to use the MAP's speaker as an external speaker for the receiver. Hooking the FC-11 up this way allowed me to make quick comparisons of "barefoot" 525 audio, FC-11-modified audio and MAP-supplied audio, with each choice driving the MAP's internal speaker. I have made many comparisons over the past six months using this setup.

Surprisingly, the differences between the MAP audio and the FC-11 audio with the NRD-525 were usually relatively minor. Either unit rendered vastly superior intelligibility as compared with the lamentable audio of the barefoot 525. In a few cases (usually muffled languages at threshold levels) the much more sophisticated and expensive MAP Unit won hands down.

One other aspect of the FC-11/NRD 525 combination is worth noting. Like most other SWBC DXers using 525's, I have found that the receiver is noticeably "more sensitive" in AM mode than when operated in either LSB or USB. This is partly due to the really fine AM synchronous detector in the 525. I now know it is also partly due to the 525's really awful sideband audio when tuning weak AM signals (ECSS). I am not exactly sure how, but the Fog Cutter improves the VERY mushy audio in weak signal ECSS tremendously and makes that mode of DXing with the 525 MUCH more effective.

## SHOULD YOU BUY ONE?

If you are using a 525 barefoot, or one of the several ICOM or Kenwood products that are notorious for poor audio, I recommend the Fog Cutter very highly. After having compared several audio processing schemes for the past couple of years, I have decided that I will never again listen to a Japanese designed solid state communication receiver's audio "barefoot." They all have poor audio! The modestly priced and small FC-11 is *not* as good as the MAP Unit, which sports 23 IC's to replace the entire back half your receiver. The Fog Cutter is, I believe, better than any active filter that I have tried. The Fog Cutter is not designed to perform het or "hash" removal to the levels of the JPS NIR-10. However, direct comparisons between the FC-11 and the MAP or the NIR-10 are very unfair to the Fog Cutter. Projected to sell for \$79.95, it costs about one-fifth of the other major audio processing devices. I have found the FC-11 to be extremely useful in both DXing and program listening. I intend it to be a permanent part of my array of DXing hardware. I will not DX without one.

More information on the Dymek FC-11 Fog Cutter can be obtained from Stoner Communications, 9119 Milliken Ave., Rancho Cucamonga, CA 91730 Phone: 714-987-4624