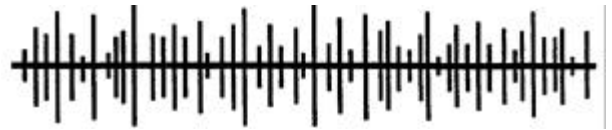


# WHITE NOISE



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## Packet Radio Software Review: PK Term '99 Timewave Corporation By Stuart Kaskawits

Amateurs with a taste for Packet Radio who have a Windows based computer always have an eye out for new Windows based Packet Radio software. For you internet surfers, surf your way over to <http://www.timewave.com> to find Timewave's version of packet software to support their new acquisition, AEA TNCs. Just download the demonstration version to experience the Windows 95/98/NT based Packet Radio software. The demonstration version limits use to VHF/HF packet at a maximum baud rate of 1200/300bps. Still, VHF packet is my primary mode. I own an AEA PK 232 MBX and use AEA's Packratt for Windows 2.0. Though Packratt for Windows 2.0 is a Windows 3.1 based program, it will function under Windows 95/98. Timewave's PK Term '99 is a native 32 bit Windows application and should have more to offer than the 16 bit predecessor.

Getting started after the download and installation routine, demo mode is chosen unless you have a registration number from Timewave. The TNC must have its Tbaud set to 9600 bps to communicate with PK Term '99. This is a limitation to PK Term's demo mode. Once the Tbaud is set in the TNC, PK Term '99 starts up by initializing with the VHF or HF Packet parameters. Three windows appear afterwards. The main window shows the menu bar with the transmit/receive panel. The transmit panel has a toggle between converse and command input. The second window is strictly a command window to the TNC. The third window is a connectionless (unproto) receive window. All three windows are independent. The connectionless window can be left in the corner of the desktop to monitor traffic.

Prior to operation, mycall must be entered from the settings panel. In addition, PK Term '99 allows callsign lookup via popular callbook software. Once the connection is made with the node/switch, the receive panel displays three different colors depending on the received traffic. The color changes from commands, converse receive and echo traffic. Upon connection, morse code announces the callsign of the connected station. Now connection to the BBS or other destination can be made using a macro or just typing in the

transmit panel. On-line help is just a click away. Just click on the question mark and select the question or topic for more info. The help is informative and nice touch when confusion arises.

More info will come in my next article after I register the PK Term '99 software. I'll have an opportunity to review the fully functional software and give White Noise the scoop.

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## FCC issues 5-MHz Experimental License to ARRL

### ARLB007

The FCC has issued an Experimental Radio Service license to the ARRL to permit two-way tests in the vicinity of 5 MHz, the most likely site of the next amateur HF band. The license, bearing the call sign WA2XSY, was issued January 8. A group of 15 current amateurs in various parts of the US and the Caribbean will conduct experimental, two-way RTTY and SSB transmissions within the band 5.100 to 5.450MHz. To avoid interfering with existing services, the participants will confine their operations to the least-populated 50-kHz segment.

"The idea is to show that an amateur allocation there will improve our emergency communication capabilities by filling the gap between the 3.5 and 7.0 MHz bands," said ARRL Executive Vice President David Sumner, K1ZZ. Sumner pointed out that several of the participants are phone net members in the Caribbean and Gulf area who frequently handle hurricane-related traffic and now must alternate between 75meters and 40 meters. Other participants are members of a nationwide digital data-forwarding network.

The Experimental license is good for two years. Two studies by the National Telecommunications and Information Administration (NTIA) include an allocation at 5 MHz among the future spectrum needs for the Amateur Service. The subject is not likely to show up on the agenda of a World Radio Communication Conference for several years, however.

Participants in the WA2XSY experiment may run up to 200 W effective radiated power. Similar multiband trap dipoles

capable of operation on 80 and 40 meters as well as at 5 MHz will be employed at each station location. Operation by participants will consist of short transmissions to determine propagation characteristics.

Participating stations are located in New Hampshire, Tennessee, Ohio, Florida, Mississippi, Wisconsin, Indiana, California, Utah, New York, Texas, the US Virgin Islands, and Maryland.

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### Pre and De Emphasis

by Verne W9ZGS

The use of pre and de-emphasis in FM broadcasting (Entertainment and Communications) gives a decided improvement in received signal to noise ratio. The higher audio frequencies are boosted in level at the transmitter and are reduced in level at the receiver. Any higher frequency noise that was picked up along the way also gets reduced at the receiver.

Entertainment broadcasting usually has the high frequency boost begin around 1500 Hz to 2000 Hz and continue upward at an approximate 6db per octave rate. This translates to a 75 microsecond pre-emphasis. Communications equipment seems to have pre-emphasis start at a lower frequency and is different with various manufacturers. Simple RC circuits can be used although other methods are popular. Resistance and capacity work because the AC resistance of the capacitor (impedance) becomes lower as the frequency goes higher. At the "crossover" frequency the AC resistance of the cap equals the resistor value. In pre-emphasis the 2 elements are in parallel. In de-emphasis they are effectively in series, an AC voltage divider.

If you do any transceiver modifying for packet use, you'll eventually be faced with having to accommodate "emphasis." You may wonder, "What does that mean, 6db per octave?" First you need to know what an octave is. Every time a frequency doubles, it has increased by an octave. Assume you are measuring a 1200 Hz tone from an oscillator across a 600 ohm load. It measures .775 volts RMS. The tone is increased to 2400 Hz. The frequency has now increased one octave - it has doubled in frequency. The level of this 2400 Hz tone is now increased by 6db. The voltage would now measure 1.545 volts RMS - about a 1.99 increase. In 1200 baud VHF packet, we use tones of 1200 Hz and 2200 Hz. Not quite an octave but very close to it. The 2200 Hz tone should be about, but not

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quite, 6dB higher in level than the 1200 Hz tone. The actual db increase is closer to 5.45dB but is close enough. Figuring RC time constants is an exercise in great pain. At the end of this piece is a chart showing standard resistance values versus capacity to obtain a 75 microsecond "emphasis." For pre-emphasis, the resistor and capacitor are placed in parallel and then this combination is placed in series with the audio to the transmitter at an appropriate point. For de-emphasis, the resistor is placed in series with the receive audio, at an appropriate point, and then the end of the resistor closest to

the last device in the chain (TNC, speaker amplifier, etc.) is bypassed with the capacitor.

You must give some thought to the resistance value selected. Input capacity of the port involved will affect your results. Watch out for that input capacity. If the input capacity is already .01Mfd, a series resistance of 10,000 ohms would put you at greater than 6dbper octave and give you too much high frequency roll-off without the use of an additional capacitor! "Purists" will object to this but my rule of the thumb allows me to use a resistor value roughly equal to the impedance it is FACING. If you were going to place a de-emphasis resistor in series with an audio signal feeding a device with a 600 ohm input, you probably wouldn't want to use a 22,000 ohm resistor - unless you had a large surplus of signal and a low input capacity. Simple math indicates that you would approach a 40 to 1 reduction in signal voltage. For a 600 ohm input you'd probably want to use a 470 ohm resistor - this would cut your audio by something less than half. The same holds true on the pre-emphasis side. I will admit that I have been known to "split the difference" on a resistor value if I am feeding a low impedance from a high impedance and have a surplus of signal voltage and a low input capacity. Try it, if you're not satisfied, try another combination.

#### RESISTANCE CAPACITY

100 ohms .75 Mf  
 220 ohms .34 Mf  
 470 ohms .16 Mf  
 1,000 ohms .075 Mf  
 2,200 ohms .034 Mf  
 4,700 ohms .016 Mf  
 10,000 ohms 7500 Pf  
 22,000 ohms 3400 Pf  
 47,000 ohms 1600 Pf  
 100,000 ohms 750 Pf  
 220,000 ohms 340 Pf  
 470,000 ohms 160 Pf

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## PBPG POLO SHIRTS

by Doug Welcker

It has been a long hard struggle but the new issue of Club shirts as turned out to of first quality. More obstacles couldn't have been encountered in the effort though. Fortunately for

Marvin (KD2CK), he has two talented sons and it is a good thing. The elder son Phil was able to enhance the Palm Beach Packet Groups palm tree logo for the copying process onto the shirts. With Marvin's receipt of the logo via E-Mail he was ready to make the customize artwork for each shirt (name/call) when his hard drive decided to crash. Since it was under warranty customer service issued him a replacement. Now you won't believe this - I was at Marvin's when there was a hard bang on the door. Marvin opened the door and saw the Airborne Freight truck driving away. The driver threw the package from the ground floor into Marvin's second floor door even though it was clearly marked fragile! Lucky he didn't break the glass door. Marvin called customer service before opening the package and they were furious wanting to know all the details of the delivery. The hard drive was reissued and delivered by a courteous driver a few days later. And this is only the beginning of Marvin's effort.

This is where Marvin's younger son Stuart (NF2N) comes in. As Stuart had built and recently updated the computer for Marvin, and Marvin not being a hardware person, Stuart advised him to hold tight. In a few weeks he would be visiting Mom & Dad from his home in Research Triangle Park, NC. With Stu's visit the replacement hard drive was installed and all files recovered. Believe it or not this was the easy part.

Could you believe that the shirts could be tied in with the dentist and a periodontal cleaning? Read on. As it turns out Marvin noticed a "T" shirt shop in the same strip mall as his Dentist. And to make matters even more interesting the owner is a ham from South Africa! What a great arrangement. The owner was more than willing to help so Marvin brought in an original club polo shirt to get the same style, color, and quality. Much to the chagrin of Marvin and the owner, the desired shirt was not able to be procured. The suppliers antics were like a tragic opera. First the color was wrong, then without a pocket, then there was no elastic in the sleeves then no collar. And of course the weeks turned into months.

Try another supplier - Yes... success. Not wanting another disappointment with the printing on the shirts Marvin spent all afternoon, after a morning dental appointment, making sure the shirts were correctly matched with the names and call signs. Congratulations Marvin and thank you for your persistence and perseverance. Marvin completed his efforts by contacting those who requested shirts via packet mail system and arranged for delivery.

Most shirts were distributed at the Miami Hamfest but if you have not received your please contact myself or Marvin.

Thanks again Marvin.

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## **PALM BEACH PACKET GROUP MINUTES**

JANUARY 14, 1999

### **BROUGHT TO ORDER**

The meeting was brought to order at 19:30 hrs. By President DOUG (WB4KGY). Introductions of members and guests were made.

### **TECHNICAL COMMITTEE REPORT**

Doug (WB4KGY) reported three separate events: on Sunday December 19, John (WB4MOZ), Burck (KE4UEV), and Billy Bob (KE4GUM) performed site maintenance at ADELPHIA Tower, adding two gallons of distilled water, installing a UPS for the computer, and measuring battery voltages and specific gravities. The UPS installation uncovered a FPAC software glitch; due to not having regular power failures to reset the timers in the HEARD LIST, we need a reset of the timers at 99hrs 59', and have asked the software writers for the changes.

### **OLD BUSINESS**

A big "thank you" is due Billy Bob (KE4GUM) for his two years of service as secretary of the Packet Group. We appreciate the considerable effort expended by Billy Bob.

A reminder that we are still looking for appropriate "homes" for the computers that have been donated by outside companies. These are available to those who have demonstrated an interest in digital radio but lack the equipment. We currently have about 15 operational units available. Interested parties should be referred to Doug.

Polo shirt status is again held up due to communication problems between several suppliers, i.e. collars, pockets, printing, etc. We anticipate availability during or just after the next club meeting.

We have books on packet radio available for lending to club members. Interested hams should see Burck.

We are still working on finalizing a replacement tower site for Belle Glade. The tower constructor is dealing with applications being turned down for insufficient reason, with new applications having been filed. Final details hopefully will be worked out at the Miami Hamboree. The APRS site in Clewiston will be on an FM broadcast tower with an effective height of 300 feet.

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A new digital mode of packet operation called PSK31 is the brainchild of Peter Martinez (G3PLX). Peter is called the father of AMTOR, and the new mode operates much like RTTY. The new PSK31 operates in 50 hz bandwidth and is very "robust". Most of the material requirements will be satisfied with a sound blaster PC board and a software package. It operates on an audio frequency in the order of 1,000 hz with a phase shift plus or minus 25 hz.

### **WORKSHOP**

There was a workshop presented by Doug on packet communications, especially the commands to make things happen.

### **ADJOURNMENT**

The meeting was adjourned at 20:25 hrs.

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## **Broward Amateur Radio Digital Society**

January 16, 1998

Once again we had an excellent program. Bill Rafus, KD4FRB, told us about the October AMSAT Symposium. He brought along a helical with ham modified down-converter for 2.4 GHz. He has now built several of these antennas and tuned them up at the AMSAT integration facility in Orlando. The modified Drake down-converter is a \$50 ham modified box that is a close equivalent to a \$500 commercial box.

The February 20 program will be by Jim Dailing, WA4CSQ. Jim is an Ace Filter Designer and was Motorola's expert until he retired. We still use the documentation he wrote. He will be talking about filters and how to make those poles and zeros say something. This will be the first of a two-part program so don't miss the first one.

Bob, N4CU