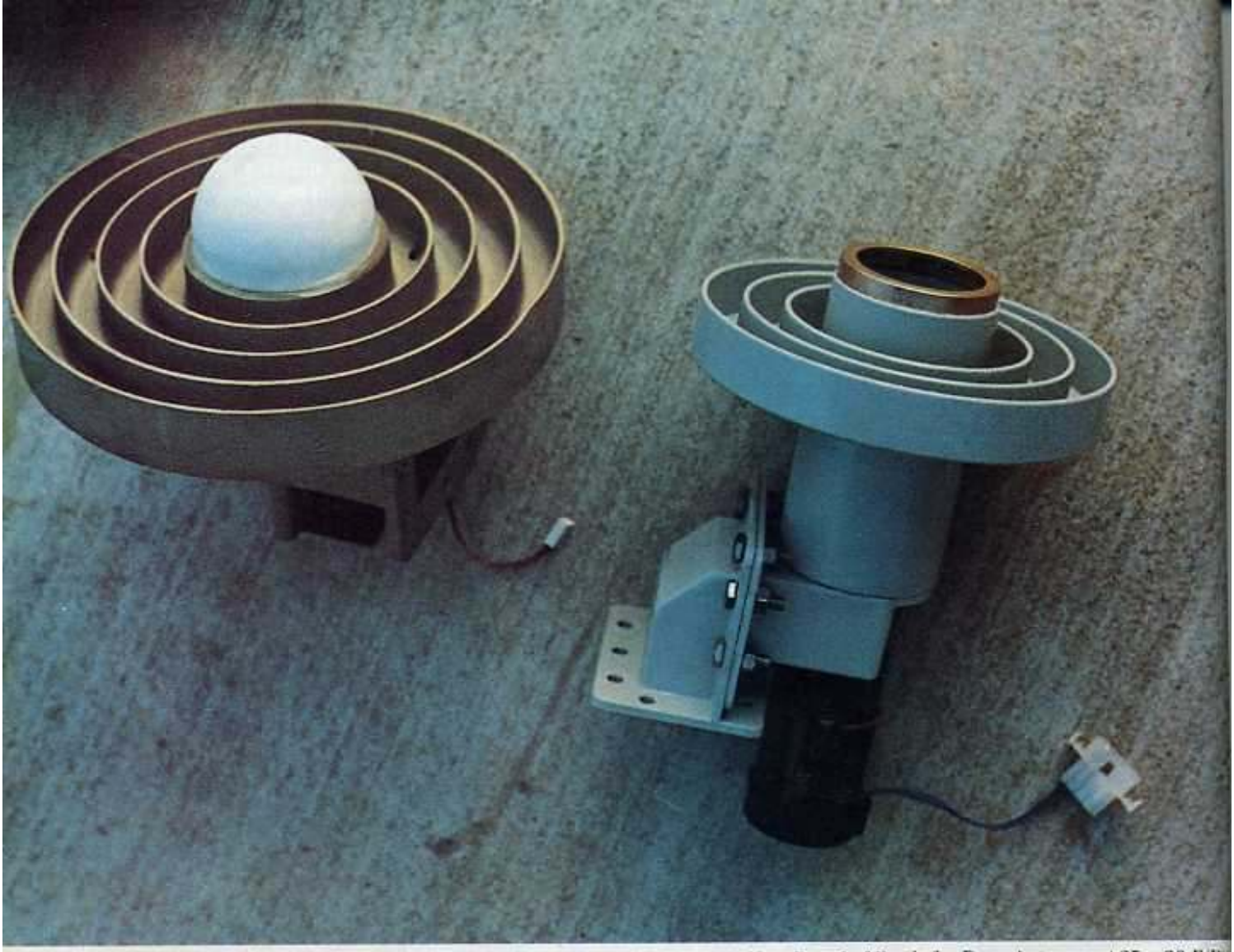


New Breed of Feeds for Deep Antennas. (.25 - .30 F/D)

New Feeds for Deep Dishes

By Mike L. Gustafson

Back in the days when this industry was only a gleam in the eyes of a few intrepid souls, the only antennas available were cast-off terrestrial communication antennas.

These antennas were deep antennas or low F/D antennas. This meant that most of the antennas had a Focal point divided by Diameter, F/D, of .25 to .30. To compute F/D all you have to do is find the focal point and divide it by the diameter of the antenna. One of my antennas has a focal point of 36 inches and a diameter of 10 feet. 36 inches is the same as 3.0 feet so if we divide 3.0 by 10.0, we get a F/D=. 0.3 F/D is just a simple way of conveying to anyone else, in a general way, what type of antenna you have.

So, with the availability of only .3 antennas, the early experimeters used what they could find. As the industry grew, a few of the antenna manufacturers started using these surplus terrestrial antennas for molds to build satellite antennas. This process was quicker and cheaper than trying to design and build their own mold. They didn't realize what kind of antenna they were copying. Terrestrial communications links, like point to point microwave systems, operate over a very short distance from hill top to hill top. In an application like that, certain kinds of antennas perform better than others. It turned out that most links were using .25 to .3 F/D antennas

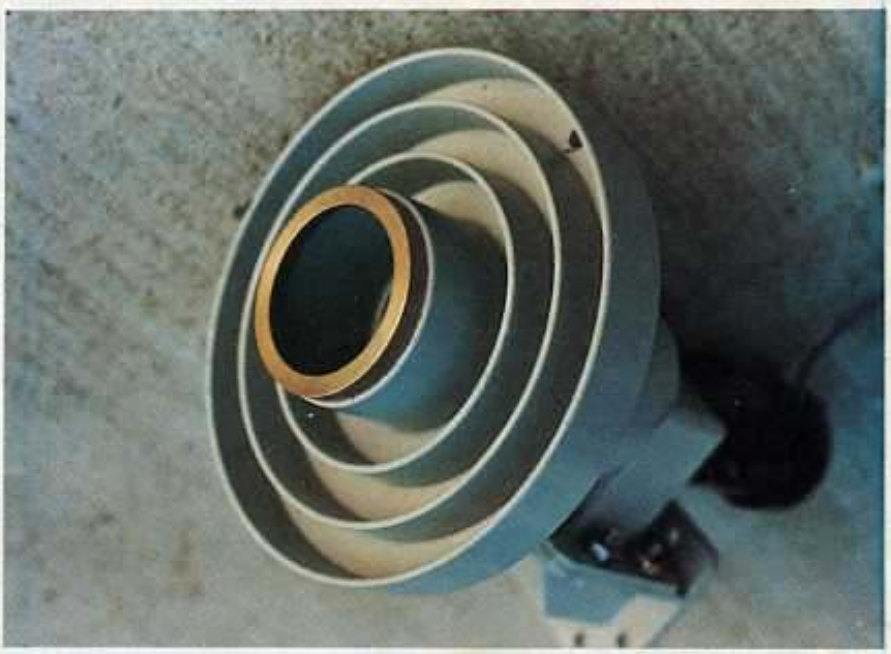
because of their excellent sidelobe and noise performance. However, what was good for a land microwave system was not necessarily good for a satellite communication system.

Terrestrial links run parallel to the earth's surface and therefore need to have a minimum of the antenna "seeing" the surface of the earth. Satellite systems are generally looking up and away from the surface of the earth and, within reason, don't need to worry about sidelobe performance or antenna noise. One of the trade-offs when using a deep antenna was in gain versus sidelobe and noise performance. As the antenna became deeper, that is, low F/D, the gain dropped but the noise and sidelobes got better. The gain drop going from .375 down to .3 F/D is in the area of −1.0 dB but the noise gets so much better that the change in carrier-to-noise ratio is only about −0.5 dB. This gain change is caused by the feed system not being able to "see" all the antenna's reflecting surface equally well. Another way of saying this is that the feed sees the center of the antenna better than it sees the edge of the antenna. As the F/D drops so does the feed's peripheral vision. With the standard scaler feed like the Chaparral Super feed or Polarotor, the illumination taper as it is called, is on the order of 17 dB for a 0.3 F/D antenna and 12 dB for the 0.375 F/D antennas. Any signal coming from the edge of the antenna is reduced by 17 dB as compared to the signal coming from the center of the antenna. This difference in illumination taper is the reason for the gain difference between a deep antenna and a shallow one.

This brings me to the point of this article. Two companies have introduced new feeds that are supposed to improve the performance of all those 0.3 F/D antennas that are currently in use. These feeds, put out by Chaparral Communications and Seavey Engineering Associates, are supposed to better illuminate the deeper antennas for better gain without increasing antenna noise or sidelobes.

I ran a series of seven tests utilizing 5 antennas all with F/D's of 0.25 to 0.3 to determine how well each of these

Chaparral Polarotor II with .3 F/D Adaptor Ring.



Chaparral Polarotor II with .3 F/D Ring Installed.

Seavey Eng. ESR-40X .3 F/D Feed.

new products performed. The objective was to determine if the gain increase was as advertised and what effect, if any, the feeds had on sidelobe and noise performance. The test procedure used was the same as that outlined in the Nov./Dec. issue of "Satellite TV Magazine". I will not bore you by going through that procedure. This will give you an excuse to bug your friends for their earlier copies of this magazine.

As you can see by the pictures, the Seavey feed, called ESR - 40X, is a whole new feed just for deep antennas. The Chaparral feed is an adaptor ring that is installed on the front of their standard feed.

There were also subjective tests performed. I installed a Chaparral .3 feed ring on a 6 ft .25 F/D antenna and the only way I know that it improved the system was that the owner wouldn't let me remove it. It had to stay on his system. A number of other Chaparral feed rings were sent out to different users and the reports were about as my data indicates, some saw a lot of improvement and some saw very little if any.

As the data indicates, both feeds raised the sidelobe performance about 1.0 dB. This isn't a significant change as most prime focus antennas will normally maintain their sidelobes in the 15 to 20 dB range. The antenna

Data.

Carrier-to-Noise ratio.

	Average	Low	High
Chaparral .3 feed	+0.5 dB	+ 0.3 dB	+ 0.8 dB
Seavey Eng. .3 feed	+ 0.3 dB	+ 0.0 dB	+ 0.5 dB

Antenna noise

Chaparral .3 feed = + 10 degrees Kelvin

Seavey Eng. .3 feed = +40 degrees Kelvin

Sidelobes.

Seavey and Chaparral feeds both indicated a + 1.0 dB increase in sidelobe level.

Conclusions

Both feeds do what they say they can do. They illuminate a deep antenna better than a standard feed. All of the data is referenced to a standard feed, in this case a normal Chaparral scaler feed designed to feed .35 to .45 F/D antennas. The C/N improvements are in tenths of a dB over this so called standard feed. I picked this feed to be used as the standard only because this is the feed most likely to be found on a satellite system in backyard use. As indicated earlier, I conducted many different test sessions. The average is just that, the average improvement over the standard feed. The low data indicates the lowest improvement I saw, and the high is the highest improvement that I measured.

noise rise is a little more important. The 10 degree rise by the Chaparral feed is not a problem, but the 40 degree rise of the Seavey indicates that the illumination pattern of the feed is a little too wide, and it is picking up a lot of the surrounding earth noise. This is also born out by the lower improvement in C/N of the Seavey feed as compared to the Chaparral feed. They both show C/N improvement; the Seavey feed could be higher if the noise pick up was a little less.

Based on the data collected during my tests as well as tests performed by others, not all deep antennas are created equal. You may find that when you install one of these feeds on your antenna that it does not appear to improve performance. The signal strength meter may rise but the pictures don't get any better. If this happens to you the fault is with your antenna, not the feed. Some of the fiberglass antennas do not maintain their parabolic curve all the way out to the edge of the antenna. When you were using the standard feed, it was not seeing much of that outer area of the antenna. Now that you are more properly illuminating the surface of the antenna, any errors out at the lip will have more of an effect than before.

That brings up another trade-off between a deep antenna and a shallow one. The deeper the antenna the harder it is to hold the correct curve over the whole surface. This problem of holding the correct curve seems to be most often found in the Prodelin 8 piece 10 foot antenna. Prodelin is probably the largest manufacturer of 0.3 F/D antennas. All of these antennas represent a natural market for these new feeds. Prodelin makes some of the finest commercial antennas I have ever seen, but in this particular model I have measured as much as ¼ inch errors in the curve 6 inches from the outer lips. As long as we were using the standard feed and under - illuminating the surface the errors didn't matter, but now that better feeds are available these errors will have to be corrected. If you own one of these Prodelin antennas and you want to try out one of these feeds, I would suggest you start with the Chaparral ring just because it is so much cheaper than the Seavey. If you note some improvement, then you can spring for the more expensive feed.

The cost for the Seavey ESR - 40X feed is $260.00. The Chaparral Polarotor I with the .3 ring is $105.00. If you already have the Chaparral feed, the ring itself is $5.00. This ring just snaps into place over the nose of the Polarotor. In both cases, the feeds incorporate polarization control electronics - both the servo feedback type and straight D.C. electric motor type. Both feeds can interface with the new breed of receivers that have the polarization control circuits which are controlled by the receiver electronics.

With any new product there are bound to be problems. After all, we

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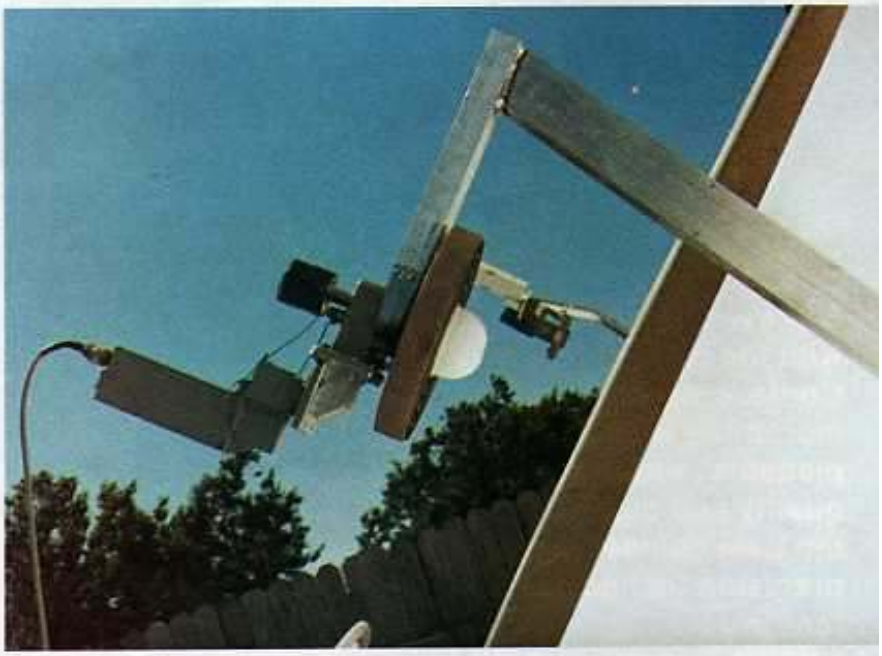
live in an imperfect world. The Chaparral .3 ring is supposed to slip into place on the nose of the standard feed. The ring will hold itself in place by compression friction. On a few of the feeds on which I installed the rings, the fit was so tight that I ruined one ring before I got it installed properly. The usual method for installing the ring is to hold it in place with one hand and lightly tap the other side of the ring with a "small" hammer. If you get mad at it, bigger hammers are allowed but all warranties are void if the ring is returned to Chaparral bent in a figure 8 pattern! Once I got the hang of it the rings seemed to get easier to install.

I had some very real mechanical problems trying to install the Seavey feed in all of my test antennas. In some cases, I was not able to install the feed at all. Whether we like it or not, Chaparral feeds are used on 95% of the non-commercial satellite systems in use today. For a company like Seavey to not make their feeds mechanically compatible with their main competition is not a very smart thing to do. All I ask is that the throat size and bolt pattern be the same on both feeds. If you, the user, are going to buy some other product to try out in your system, you don't want to be forced into rebuilding the system just to try it out. I would strongly recommend that Seavey look into making their feed such that it will bolt into the same support that the Chaparral system uses. This will greatly expand the number of possible retrofit sales for the ESR - 40 X feed. As it is now, there is ony one feed support that will accept both the Chaparral and the Seavey feed without getting out the hacksaw. This is the figure 7 feed support used most often on the Prodelin antennas.

Both of these products perform as they are supposed to. Now that there are new feeds on the market for the deeper antennas, the overall system performance can be optimized. The antennas with poor parabolic curves will no longer be able to hide behind an under-illuminating feed. These antennas will have to be corrected so that the consumer can take full advantage of the total reflecting surface. This will become more critical as market pressures push for the smaller antennas with large antenna performance. If the efficiency of smaller antennas can be improved by using one of these feeds, then smaller antennas might be usable under 2 degree satellite spacing and satellite power loss.

If you elect to try out one of these feeds, I would be interested in hearing from you. Drop me a line and let m know how it worked on your system. I get enough of a response, I will repo your findings in a future article editorial. Until next time, good lu with your system and make sure it weather-proof. Winter is just arou the corner!

★ ★ ★



Seavey ESR-40X Installed In Antenna

Chaparral .3F/D Feed On Antenna. Note Adapter Ring

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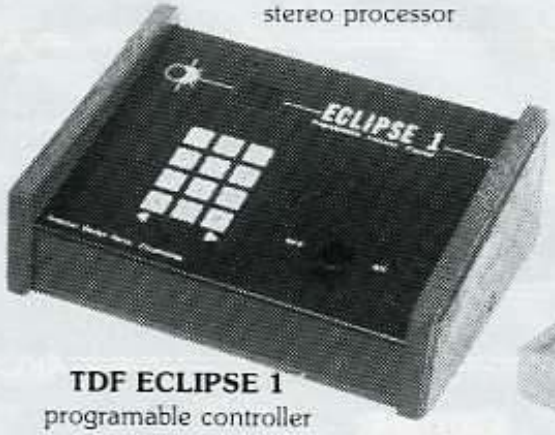

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Product Review

Avcom COM 2A Satellite Receiver

Avcom of Virginia, although not one of the big volume producers of satellite TV receivers, has a well deserved reputation for manufacturing a high performance receiver (with a minimum of bells and whistles). Andy Hatfield, president and founder of Avcom believes good basic performance should come before the "window dressing". Avcom has been in the consumer satellite TV market as long as anybody and dates back to 1979. For two years Andy Hatfield set the standards for performance in the home market.

The Com 2A has evolved from the original Com 2 introduced in the summer of 1982 and performance wise the receiver certainly lives up to the standards of its predecessors. The receiver comes with a wired remote control from which all functions of the receiver can be controlled including continuous tuning channel selection, audio tune, audio volume, wide or narrow audio filter (280 KHz and 100 KHz), AFC defeat and scan. Most controls must be switched from the remote control since the front panel of the receiver only contains a signal strength meter, adjustments for meter sensitivity, scan control and AFC defeat. This receiver is designed to be located out of the way and all operational controls can be accessed from the remote unit. In fact, you could hide the receiver completely out of sight if you buy the new optional remote control unit for the Com 2A. This remote control has all the features of the standard remote plus a field strength meter. Very handy!

Rear panel connectors include 70 MHz IF input (from the downconverter), audio and video (RCA jacks),

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SPECIFICATIONS

DOWNCONVERTER, RDC-10 - REMOTE

Input Frequency:	3.7 to 4.2 GHz
Input Impedance:	50 ohms
Input Level:	−55 to −25 dBm
Bandwidth:	500 MHz
Flatness:	± .8dB/100MHz
IF Output Frequency:	70 MHz
IF Output Bandwidth:	36 MHz
IF Output Impedance:	75 ohms
Image Rejection:	23 dB nominal
Supply Voltage:	+ 23 V.D.C.
Tuning Voltage:	−6 to −14 V.D.C. nominal (via IF coax)

RECEIVER, COM-2

IF Input Frequency:	70 MHz
IF Input Impedance:	75 ohms
IF Input Level:	−50 to −20 dBm
IF Bandwidth (standard):	28 MHz
(other bandwidths available)	
Threshold Level:	Better than 8 dB C/N

Video Specifications

De-emphasis:	CCIR 405-1, 525 lines
Frequency Response:	to 4.2 MHz
Dispersion Removal:	43 dB nominal
Output Level:	1 volt p-p
Output Impedance:	75 ohms
Output Polarity:	Standard, Negative Sync
(Polarity is internally reversible)	

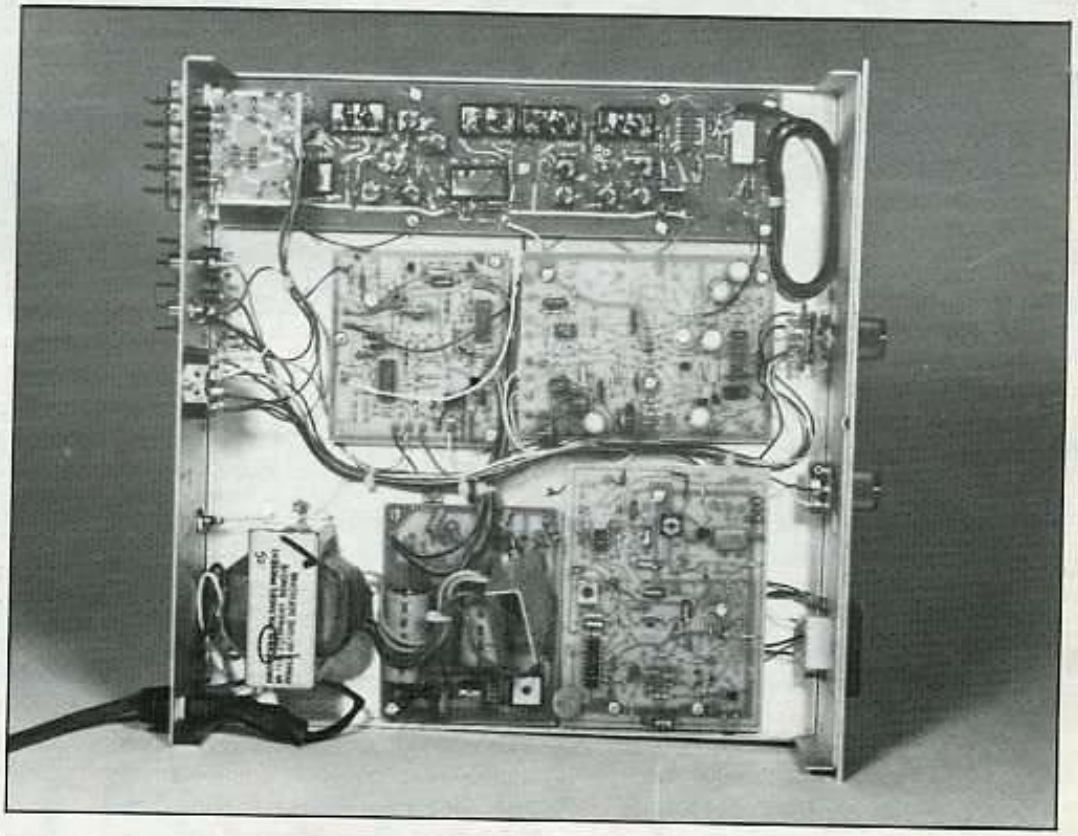
Tunable Audio Specifications (Standard)

Subcarrier Frequency:	4.5 to 8.0 MHz
Bandwidth, Dual:	280 KHz wide, 120 KHz narrow
De-emphasis:	75 microseconds
Frequency Response:	100 Hz to 15 KHz
Output Response:	600 ohm balanced or unbalanced
Output Level:	1 Volt, adjustable

remote control (12 pin Jones plug), and a 23 volt output for the downconverter. Optionally available is a modulated (channel 3 or 4) RF output, a video baseband output (unfiltered video for stereo processors) and 4 pin terminal strip which interfaces to the Chaparral Polarotor 1. Downconverter tuning is DC coupled through the 70 MHz IF cable. Avcom recommends a **minimum** of 120' between the downconverter and the receiver and runs of up to 600 feet may be used without undue attenuation.

The downconverter contains relatively conventional single conver sion image reject type mixer with a 7 MHz hybrid amplifier to boost th output to the receiver. It connects t the LNA through RG 214 (45 ft max or RG 217 (100 ft max) coax with

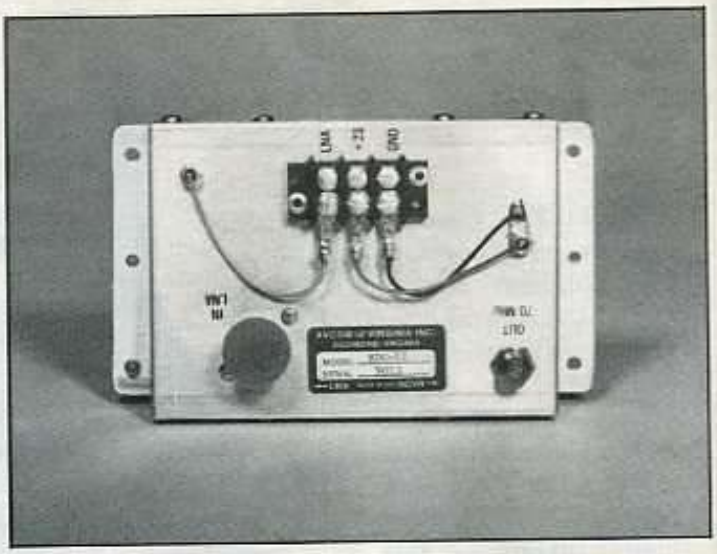
RIGHT: The Com-2A satellite receiver with the optional remote control. The standard remote is identical except for the signal strength meter. (Note Cable Connecting Remote With Receiver). LOWER RIGHT: Spacious layout of this chassis makes servicing easy. (Note Coaxial Delay Line in Upper Right Hand Corner).

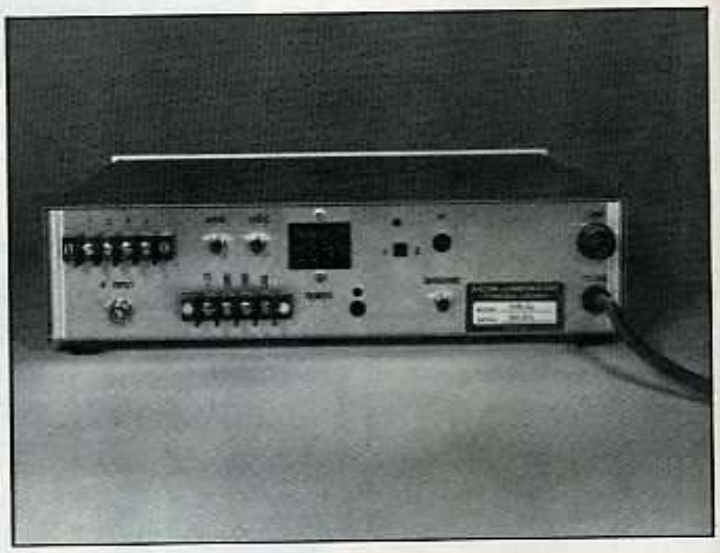


connectors. Since the unit is not weatherproof it must be enclosed in a Nema type enclosure or located in the house which is not a problem as long cable runs can be tolerated between the LNA and the downconverter. Avcom does offer a weatherproof enclosure as an option.

The receiver circuitry is laid out on individual circuit boards -- five in all. 70 MHz bandpass filtering is accomplished using conventional LC (Inductive/Capacitive) filters with hybrid amplifiers interspersed. A coaxial delay line demodulator and a Mini

RIGHT: The Avcom downconverter must be enclosed in a weatherproof box if mounted outside. You can obtain such an enclosure from Avcom as an option. BELOW: The Com-2B is basically the same receiver without remote capability. LOWER RIGHT: Rear view of the COM-2A receiver.





Circuits Laboratories mixer remove the information from the carrier which then feeds through a CCIR filter to the video and audio processor stages. The overall design is conservative, uses standard components throughout, and is extremely field serviceable.

Audio and video performance has historically been top notch with Avcom receivers and the Com 2A is no exception. The receiver offers low threshold performance (minimum signal) and of the receivers tested by STV Magazine - only the Arunta 421 has equalled the sensitivity. The IF bandwidth checked out at 28 MHz (3 dB) which provides excellent detail and color clarity. The picture was pleasing to watch and sparkles on weak transponders were not objectionable and in fact seemed much smaller and softer than most receivers.

There is very little to fault on this "no nonsense" receiver if you are not overly concerned with aesthetics. The Model COM 2B has identical circuitry to the COM 2A but does not have the remote control feature - instead all controls are on the front panel of the receiver.

A limited warranty of 120 days does seem skimpy although in all fairness Avcom has a reputation for looking after their customers long after the warranty has expired. The owners manual supplies all the interconnect instructions but is very short and lacks any trouble shooting assistance. The receivers do not come with any interconnecting cables or connectors (except for the remote control cable on the COM 2A).

At a list price of $995.00,($965.00 for the COM 2B) the receiver is not cheap by today's standards but does offer excellent performance.

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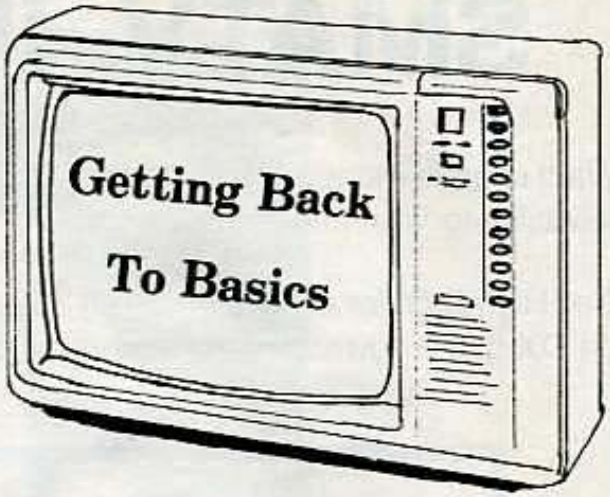

By Gary Wheelus

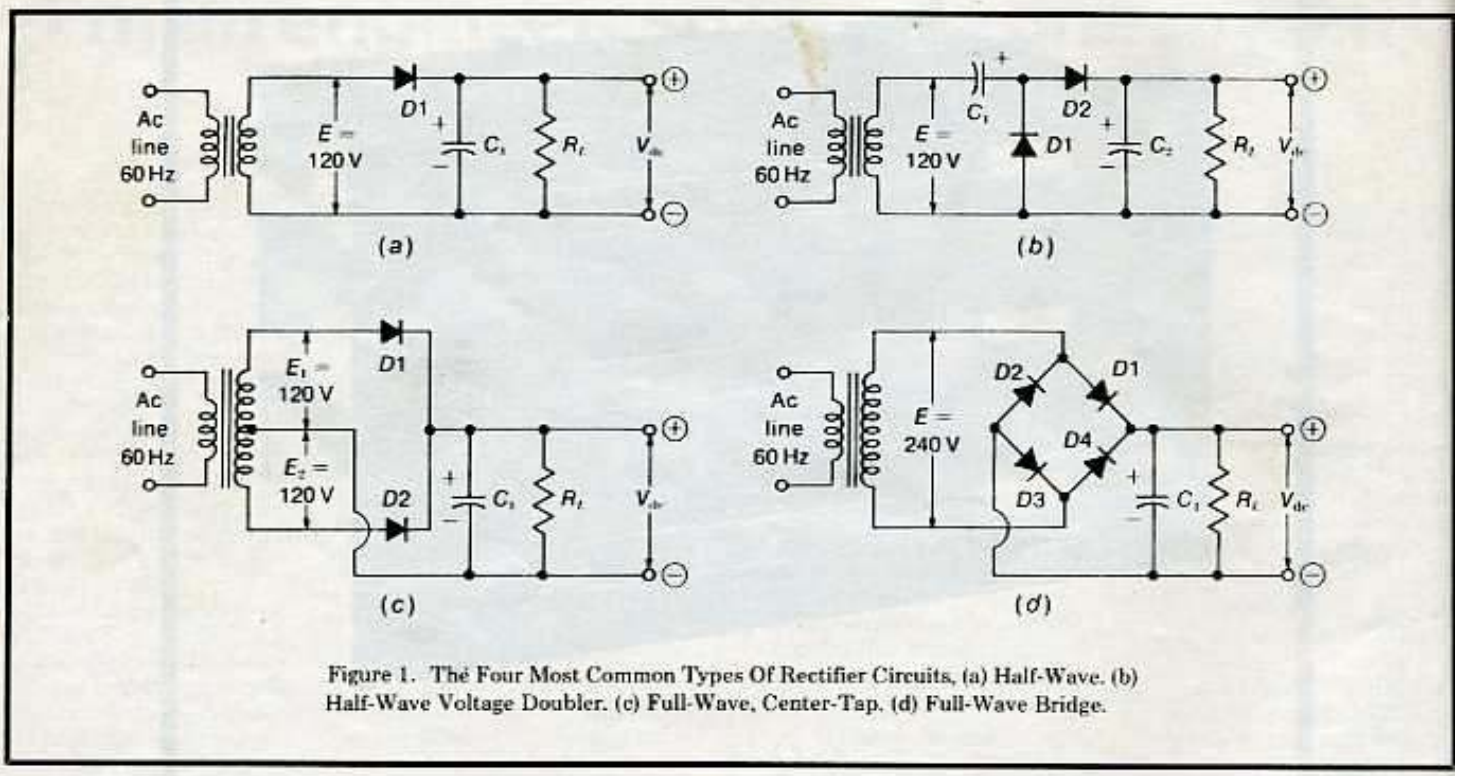

Figure 1. The Four Most Common Types Of Rectifier Circuits, (a) Half-Wave. (b) Half-Wave Voltage Doubler. (c) Full-Wave, Center-Tap. (d) Full-Wave Bridge.

Figure 1 shows the four most common types of power supplies: The half-wave, the half-doubler, full-wave center-tap, and full-wave bridge. All these circuits are shown with an isolating power transformer, but they could be connected directly to the AC line (except for the full-wave rectifier in (c) which needs a power transformer for the center tap. The polarity of the DC output voltage is positive in this illustration, but it could be inverted or made negative by reversing the diodes.

The approximate amount of DC output voltage can be calculated by a formula if we assume certain conditions exist or if we know some of the controlling factors of the power supply. In figure 1, we will assume the diodes are silicon diodes and the load current is 300mA. The formula is VDC = 1.2 times Erms (Where Erms = 120 VAC). The factor 1.2 is used for a power supply having an input capacitor (C_1) and silicon diodes. Using this formula we find that the DC output voltage for the half-wave rectifier in (a) is $1.2 \times 120 = 144$ VDC. For the voltage doubler in (b), the DC output is $2 \times 144 = 288$ VDC. For the full-wave center-tap rectifier in (c), the output is 144 VDC. In this example, we assume the total AC secondary voltage is 240 V, with 120 V for E, and 120 V for E_2.

In (d), the full-wave bridge rectifier uses the entire AC secondary voltage for DC output voltage. The DC output here would be 288 VDC with 240 VAC input to the bridge.

The half-wave rectifier is again illustrated in figure 2. The half-wave rectifier is fundamental to all types of power supplies, because any one

diode by itself can be only a half-wave rectifier. The other circuits are just combinations of half-wave diodes. A full-wave rectifier is really two half-wave diodes back to back, to conduct on opposite polarities of the AC input. A voltage doubler can be considered as two half-wave rectifier circuits that are effectively in series for DC output voltage.

Figure 2 (a) and 2 (b) show the opposite diode connections that make the DC output voltage either positive or negative. No filter capacitor is shown here in order to show the basic waveforms of half-wave rectification. The diode in (a) only conducts on the positive half-cycle of the AC waveform, while the diode in (b) conducts on the negative half-cycle.

No power supply transformer is used in figure 3 for this illustration of a typical half-wave power supply that is not isolated from the power line. C_1 is the filter capacitor which is used to remove the 60 Hz AC ripple from the DC output voltage. The capacitor input filter is necessary to provide DC output voltage during the time when the diode is not conducting.

R_1 in series with D_1, is used as a surge protection resistor. It limits the peak current through the diode when C_1 is charging. The resistance is generally 3 to 7Ω with a power rating of 5 watts. When a power transformer is used, R_1 is not needed because the secondary winding has the required series resistance. This circuit has positive DC output for B+ voltage. The AC input is applied to the anode of D_1. Notice that the B− side of the power supply is connected to the grounded, or neutral, side of the AC input from the power line to reduce shock hazard.

In figure 3, the capacitor C_1 charges fast through the very low resistance of the rectifier diode when it conducts, but discharges slowly through the load resistance. As a result, C_1 maintains the DC output voltage during the half-cycle when the diode is not conducting. In this process of fast charge and slow discharge, the filter capacitor has the following effects:

1. The 60 Hz AC ripple is practically eliminated from the DC output.
2. The DC output voltage is maintained during the entire cycle of AC input.
3. The DC voltage across C_1 puts reverse bias on the diode so that it can conduct only at the peak of the AC input. As a result, the diode is a peak rectifier.

The waveforms in figure 4 illustrate the diode operation with the input filter capacitor. In 4(a), the sine-wave voltage is shown for the AC input across terminals a and b in figure 3. Note that 120 VAC is the rms value of the sine wave, while the peak value is $1.4 \times 120 = 168$ V.

The waveform in figure 4(b) shows the DC output voltage across C_1 and R_L in parallel. This voltage is labelled V_{CB} between points c and b in figure 3. Let's assume that the circuit has been operating for a few cycles of the AC input to charge C_1. Then the diode is forward-biased just for the time from T_1 to T_2. Only during this period does the AC input voltage make the disk anode more positive than the DC output voltage at the cathode. Remember that positive voltage at the diode cathode is reverse voltage to the anode that prevents conduction.

During the short conduction time from T_1 to T_2, a large pulse of current flows through the diode and the AC input circuit to charge C_1. As a result, the voltage across the capacitor rises rapidly. The time constant is short with the very low resistance of the forward-biased diode. The peak capacitor voltage is practically equal to the peak value of the AC input voltage, minus the 1 volt drop across the silicon diode.

After the time T_2, the AC input voltage is not positive enough to forward-bias the diode, and it stops conducting. The diode is then an open

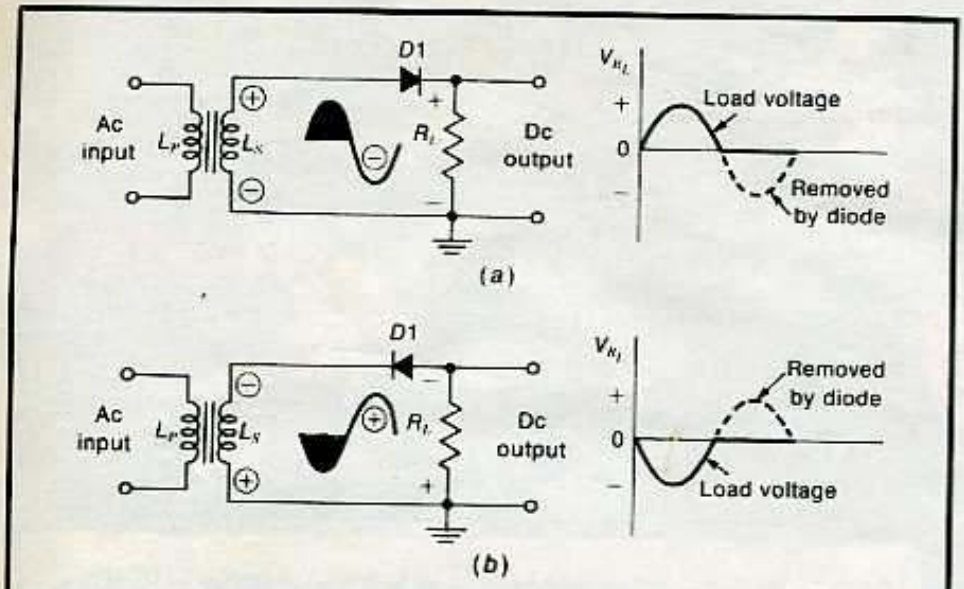

Figure 2. Half-Wave Rectifier Circuits Without Filter, (a) Positive DC Output, (b) Diode Reversed For Negative DC Output.

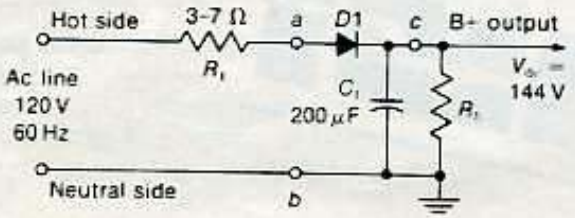

Figure 3. Line-Connected Half-Wave Rectifier With Filter

circuit, and it cannot charge C_1. Then C_1 discharges slowly from time T_2 to T_1 through the relatively high resistance of the load resistance R_L.

The same sequence is repeated for every AC cycle. As a result, V_{CB} across C_1 and R_L in parallel, is a relatively steady DC output voltage, with a very small component of 60 Hz AC ripple.

The peaks of current that flow through the diode to charge C_1, are shown in 4(c). A peak value of 4 amps is shown here. This figure is 10 times the typical forward current of 400 mA assumed for the load.

Actually, the filter capacitor supplies the current to the load for about 90 percent of the time, while the diode is not conducting. During the 10 percent of the time when the diode is on, it allows the AC input voltage to charge C_1 while supplying the load current.

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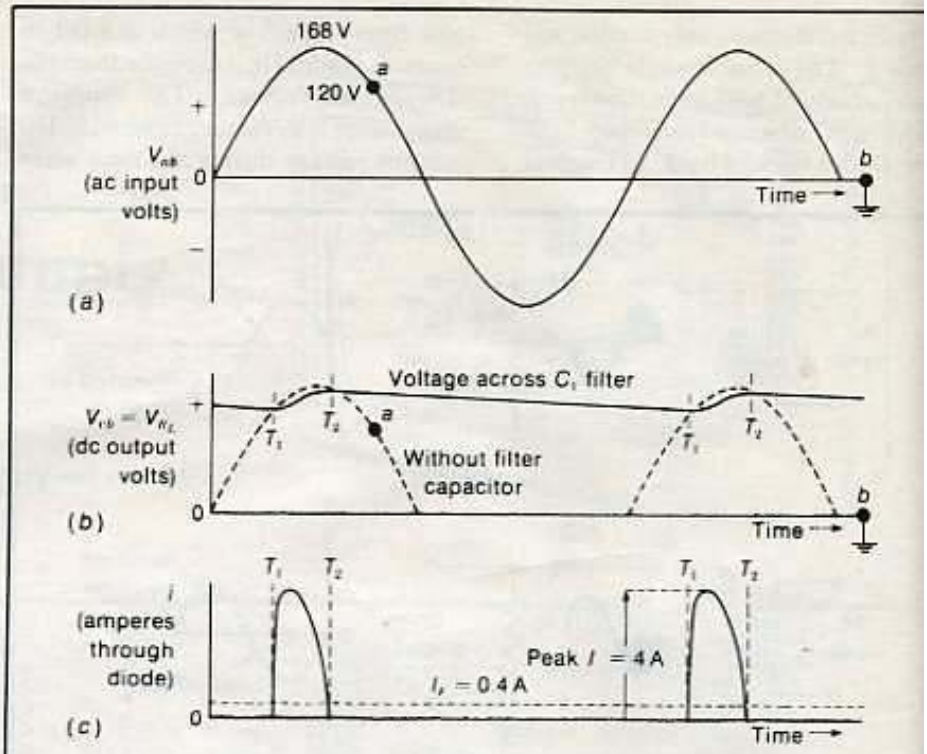
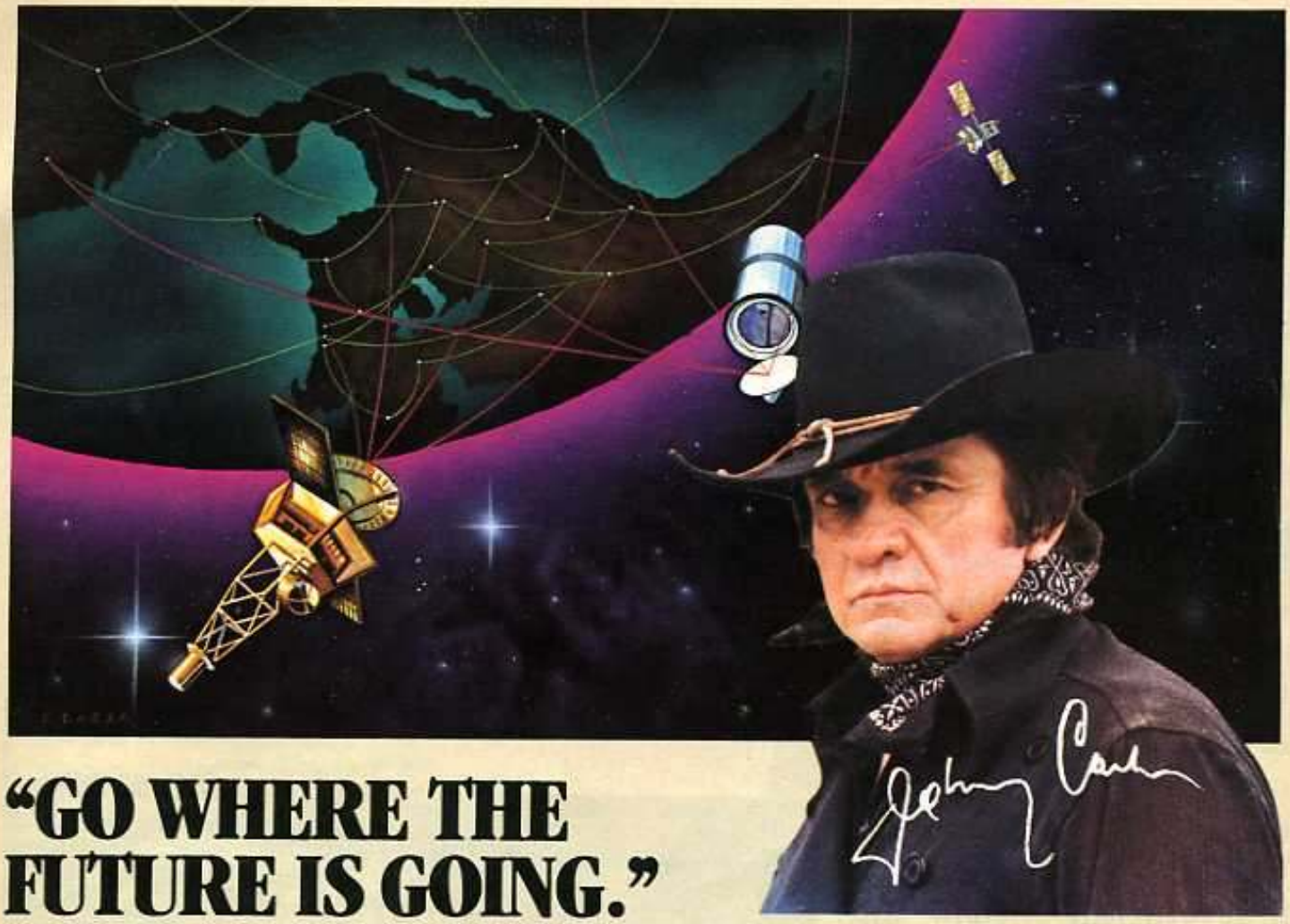


Figure 4 Waveforms of Half-Wave Rectifier. (a) AC Input Voltage V_{ab}. (b) DC Output Voltage V_{cb} Or Voltage Across R_L. (c) Current Through Diode.



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Ford's Continental Concept 100 Brings Satellites To Detroit

By Stan Prentiss

Detroit, Mi. How would you like to go cruising along at some open road speed between 30 and 60 mph, push a button, an instrument panel cathode ray tube lights up and an illuminated road map appears with you on it - or should we say the Electronic Concept 100? If you're in the Motor City, for instance, a chart of the main roads is laid out and your exact position identified. How? The U.S. Navy's Transit satellites are the answer, and Magnavox's modified marine receiver helps do the rest (Fig. 1).

A series of these Transits circle the earth in 106-minute Polar orbits at an altitude of 1,075 kilometers (668 miles). Collectively, these orbits effectively resemble a bird cage when overlaps are plotted, and each satellite continuously transmits its position as a function of time.

Using the Doppler method of measuring signals as the satellite approaches, passes overhead, and recedes, the receiver will calculate the automobile's (or ship's) position relative to orbit path. It does this by assessing the vehicle's speed sensor for distance traveled, and is guided by a gimbaled flux-gate magnetic compass automatically compensated for

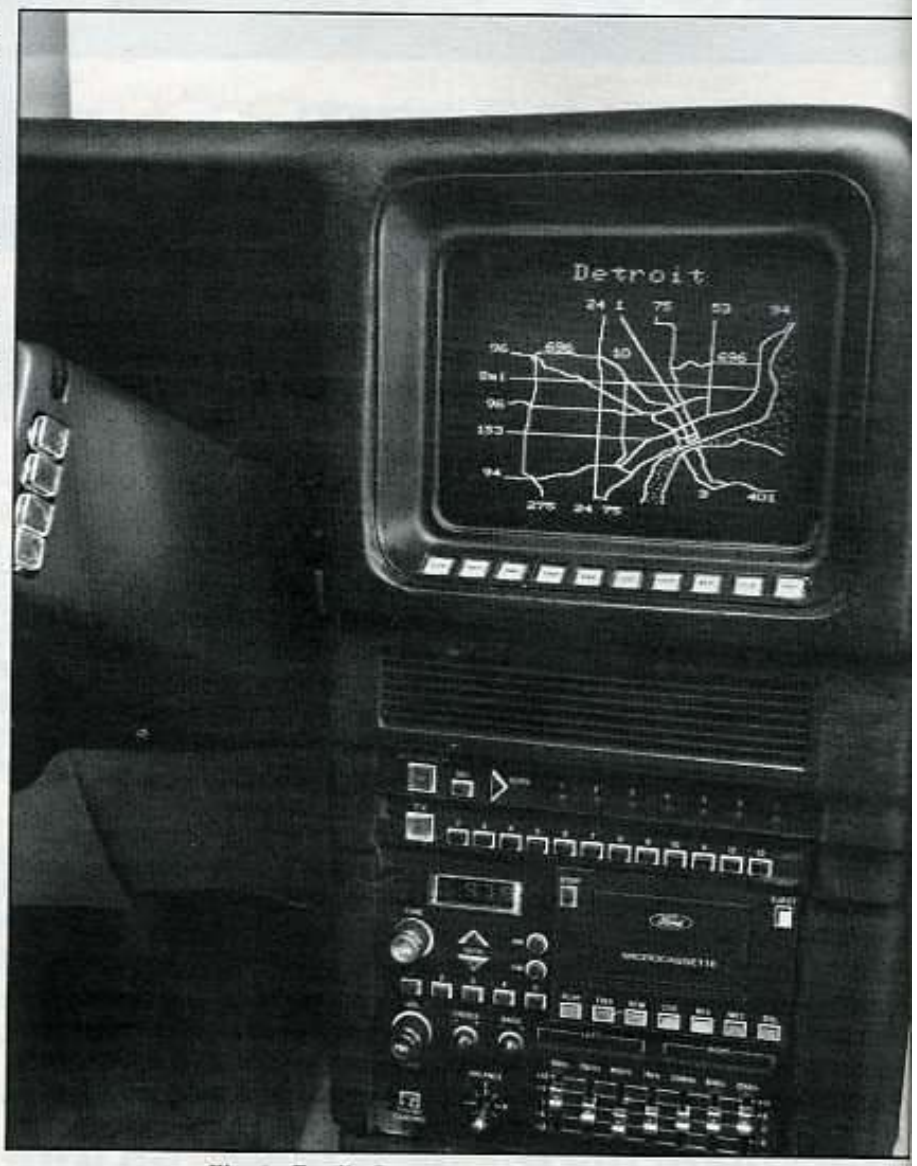

Fig. 1 - Ford's Concept 100 Instrument Panel

both vehicle deviation and the earth's magnetic variation.

A programmed software routine converts longitude and latitude positions of the auto from satellite contacts and, by dead reckoning, plots its position and the direction of travel on the cathode ray tube display. Should you also wish to "box the compass" by reading its rose, this is available on the CRT, as are latitude, longitude, and next satellite pass information. Area and city maps, are preprogrammed in memory for convenient use when and where required.

Availability

No, the system, isn't immediately available since it's still housed in Ford's experimental continental Concept 100 electronic auto. But, judging from our enthusiastic response when querying engineer Mark Jarvis of the Advanced Instrumentation and Entertainment Engineering Dept., and Public Affairs Chief Jim Allen, Ford will definitely bring the idea and hardware to market in "the late 1980's" at some cost target between $500 and $1,000. Meanwhile, there's considerable work to be done in streamlining the electro-mechanics, cost-cutting, and fitting the entire package conveniently into an instrument panel and/or wherever else portions can be lodged.

As you may surmise, the 9-inch, 6 primary color and black-white cathode ray tube does a great deal more than just display road and vehicle outlines. Reds and blues are used to indicate hot and cool conditions while a 10-grid dual, touch-type plastic membrane covers the cathode ray tube and readily responds to simple finger (capacitative) excitation. If you'd like a glance at the current monthly calendar, time set, date, elapsed time, odometer, fuel economy, etc., just press the designated grid and up pops the information, along with destination distance. But if you'd prefer an automotive system and service interval checkout, then these figures are available, too. Also there are temperature control as well as airflow patterns for the vehicle's various modes of operation such as fan speed, climate control, and interior temperature. Add to this a graphic warning display of the auto's silhouette (Fig. 2) with such indicators as doors open, low tire pressure, etc., and you have the complete package.

The cathode ray tube is operated at nominal television scan frequencies of 60 Hz vertical and 15,750 Hz horizontal scan rates, is of shadow mask phosphor construction with dot-type black matrix and 0.3 millimeter dot spacing.

CONTINENTAL CONCEPT 100

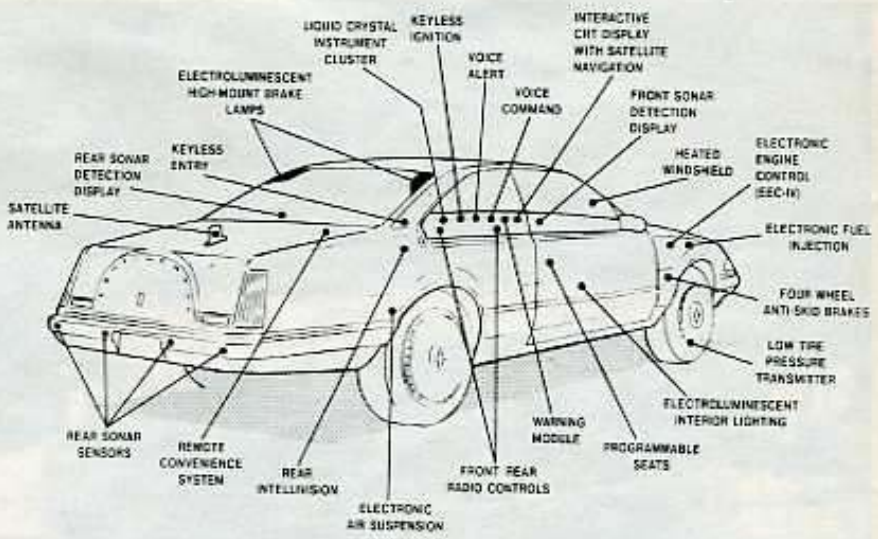

Fig. 2 - Concept 100 Feature Identification Chart

That's Not All

If that isn't enough, the Concept 100 Ford actually **talks back** in plain English - no VW, Svenska, Mazda language here! "Your lights are on, the trunk is open, check oil pressure, battery discharging, brake fluid low, fuel low, windshield washer needs refilling," are all audible. What's more, the driver can talk back. Via a microphone near the steering column, he can call for the antenna to be raised or lowered, wipers and headlights turned on and off - all via **trained** voice recognition in the vehicle's vocabulary.

Then there's a remote pushbutton transmitter that unlocks doors, blows horns, releases trunk lids, ignites courtesy lamps, and flashes lights for car location and dangerous conditions.

You will also find keyless entry ignition, all done with special user codes and pushbuttons, and sonar detection system warnings to the driver for obstructions, as well as parking distance between his or her car and adjacent vehicles.

Naturally you'll find an all-electronic AM/FM stereo radio, joystick control for speaker balance/fade, a weather scanner, sound system for TV audio pickup, and a 5-inch color Intellivision screen for those who want to play games in the back. At 55 mph, Electronic Engine Control IV can read seven engine parameters and change operations in about 300 milliseconds, or less than one full engine revolution. We aren't told if readouts become faster as the engine accelerates, but this is already faster than standard eye perception and that should satisfy most humans at least some of the time. Ford won't say if it's working on autotelevision, but chances are that's in the works, along with some form of convenient cellular radio, as well.

The Navy's Transit Satellites

Weighing about 115 lbs. and whizzing around the earth in Polar orbit every 106 minutes, these tiny satellites - there are five - have been operational in their 600-mile nautical flights since 1964 and still continue to

be supported by the U.S. Navy's submarine service.

During July 1967, however, civilian access was authorized and today there are an estimated 40,000 users on both land and sea. Operations are based on the Doppler principle of rising and falling frequencies, with signals modulated by the satellite's relative location in space. This results in a line of positions originating from Doppler emissions. The receiver may then establish a fix or position for whatever ship or vehicle's involved.

If you plan to gin one of these units up yourself, receivers are priced between $1500 and $100,000 depending on accuracies required and whether both 150 and 400 MHz frequencies are necessary to establish a fix. At present, best accuracy amounts to 185 meters, but in the 1990's when Transit is to be replaced by the Global Positioning System, accuracies will improve by more than a factor of 10, to 16 meters, according to Jerry Hoskins and Naval Officers Lt. Tom Yeager and Capt. Bob Munn.

One If By Land, Two If By Sea

Lexington hero Paul Revere would have a tougher time signaling satellite approaches these days than that of the revolutionary British redcoats. For with Magnavox' versatile MX 4102 satellite navigator for ships now being converted to an X02 for automobiles, redheads or redcoats could accurately come from anywhere.

A tiny 11 × 3-inch unit loaded with precision electronics, the 4102/X02 are sisters under the skin except for the following general changes in the X02, including:

Magnavox MX 4102 Satellite Navigator.

1. An automotive antenna and flux gate magnetic compass as part of the externally mounted system.
2. An absolute barometric pressure sensor with calibration provision and special interface for altitude estimation.
3. A clock function for Greenwich Mean Time (GMT).
4. An internal battery to maintain time and important memory operations with operating power off.

All this permits the X02 to determine the automobile's position directly from satellite fixes; select best signals for accurate tracking; dead-reckon positions either manually or automatically, as preferred; show error conditions and continuously deliver GMT to the nearest second. The rest is similar to Magnavox' standard MX 4102 satellite ship navigator that does lots more.

Using the MX 4102 on the bounding main, you can have all the basic information at your eyeball/fingertips by just entering your appropriate location , time, date, and antenna height. Or perhaps you'd like trip planning layouts up to 9 waypoints, compare Great Circle and Rhumb Line routes, or compensate for magnetic compass deviation.

In the adjacent Table you'll see explanations for a dozen abbreviations on the center keyboard. These are the keys that **extract** information from the Sat Nav. On the right are 16 key numerals and symbols that **enter** information. Then, on the left, is an alpha/numeric readout in seagreen with a third set of "menu" keys and the on/off switch that permits selection of any specific information available in the 4102's operating mode. Should you want speed, heading, drift and set, time, distance run, satellite fix, or even have the unit respond to newly created conditions, these may all be manually requested.

To calibrate the fluxgate sensor/compass, the vehicle operator simply punches CAL button, turns his car in a complete circle, and a powerful microprocessor calculates readings into magnetic headings. After that, the microprocessor automatically computes local magnetic variations and the job's all done. Best satellite fix accuracy at 400 MHz for the X02 can be calculated using the equation:

$$\text{Sat Fix} = \sqrt{A^2 + B^2 + C^2}$$

Where A = 200 meters static error, B = 200 meters per km/hr unknown vehicle velocity; and C = 1-3 meters/meter of unknown elevation due to possible barometric and altimeter errors. Normal operational power drain amounts to 20 watts, plus an additional 2 watts continuous to maintain an oven-controlled 5 MHz local oscillator with short term stability of one part in 10 to the ninth power. PROMS and RAMS supply over 40 bytes of memory, and best receiver sensitivity begins at −145 dBm.

Computer/X02 bidirectional communications are carried out in HEX-

ASCII format and converted to binary within the X02. Max. 3-byte, 24-bit word lengths are possible, with each internal word being transformed four bits at a time within a HEX-ASCII character. Logic flow is asynchronous with one start, one stop, seven data bits, and an odd parity bit.

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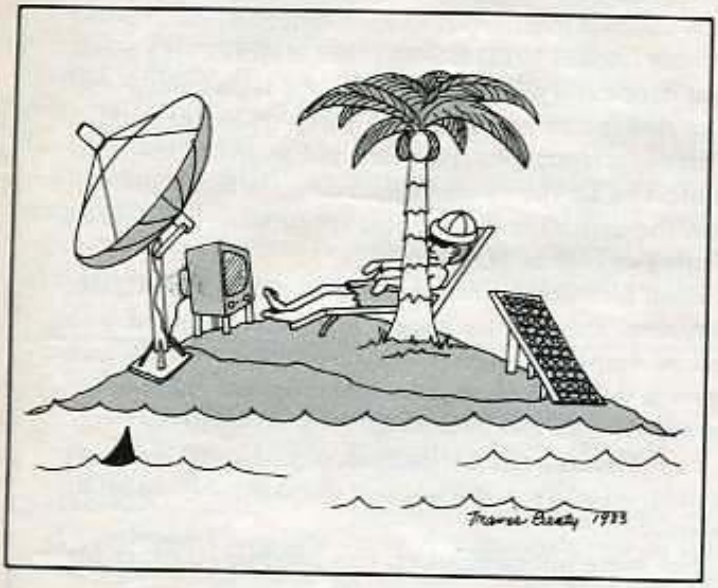


New Product Highlights

ScanMaster Aluminum Antenna

LAKE CITY, SC--Scanmaster Communication Systems, Inc., introduces an aluminum antenna, dye-punched by computer control for a perfect fit and true parabolic curve. The 10' antenna is manufactured in Mankato, Minnesota and comes in twelve individual sections that can be assembled by a do-it-yourselfer in just a few hours.

In addition to a perfect fit each time, the ScanMaster antenna (model 1012) boasts other features: It's made from aluminum alloy #5052-H34 for high quality and has a .080 thickness for rigidity. Deep-dish construction reduces terrestrial interference and shortens the focal point. The acrylic enamel finish diffuses heat reflected from the dish, thereby keeping electronic components running as cool as possible.

Polar Mounts are included as part of the ScanMaster aluminum antenna package. They are designed with special emphasis placed on tracking ability. A jack screw is standard for manual planning, but a motorized linear activator can be added.

ScanMaster gives customers a 2-year warranty against defective materials and workmanship on all its products.

For more information on this product, contact Mr. Gene Biedscheid.

Mr. Gene Biedscheid
ScanMaster Communication Systems, Inc.
207 St. John Street
P.O. Box 1727
Lake City, SC 29560
(803) 394-2723

"Satellite TV Basics" Videotape

This professionally produced videotape answers most of the basic questions about satellites, satellite programming, what equipment is needed, and how it all works, in just over 12 minutes. It is designed for TVRO dealers to show to customers in their showroom or at county fairs, etc.

Just released at the June CAN/AM Satellite Show in Minneapolis, this tape can eliminate the need for salesmen to answer these basic questions over and over again. Available in both Beta and VHS formats, from:

Shelburne Films
54545 SR681
Reedsville, Ohio 45772
(614) 378-6297

Winegard Introduces Full-Function Satellite TV Receiver

BURLINGTON, IOWA - Winegard Company has announced introduction of a new Home Satellite TV Receiver model SC-7032.

The versatile SC-7032, with an attractive consumer designed housing, has a full range of features to fill the requirements of the home satellite TV reception system. Included are channel scan for convenient and quick review of available channels on each satellite, polarity reversal button, signal strength meter for easy video fine tuning control, audio tune, channel select with LED readout, built-in satellite selector control with LED read-out for optional actuator, and built-in polarotor that automatically changes polarization. In addition, an optional channel select remote control with fine tune button and up/down transponder switch is available.

A single conversion down converter with IF output of 70 MHz mounts at the antenna with 72 ohm output for coaxial cable to the receiver. A channel 3 crystal control modulator is built-into the receiver.

For More Information contact:

Winegard Company
3000 Kirkwood Street
Burlington, Iowa 52601
(319) 752-3607

Automation Techniques Introduces New Home Satellite System

LAS VEGAS, NEV. -- Automation Techniques, Inc., one of the leading satellite receiver manufacturers in the commercial and cable television industries, announced it has entered the home TVRO market with a new equipment package called the GLS-800 -- "Great Little System" -- Series.

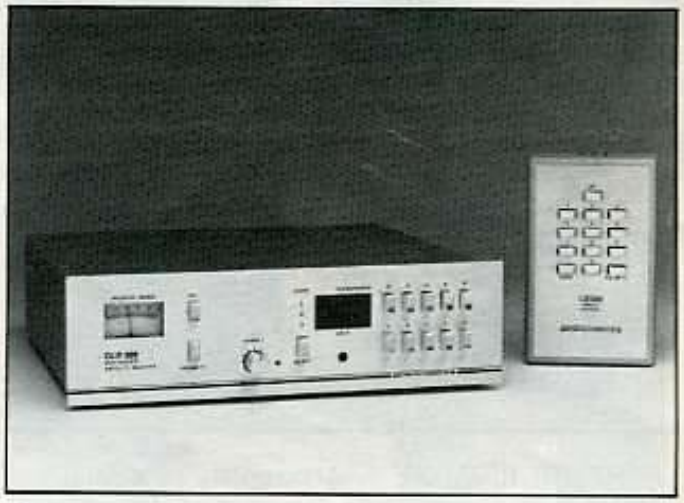
The package includes ATI-produced and technically matched dish, feedhorn, low noise amplifier, downconverter, receiver and remote control. It was unveiled for industry and press personnel at the National Satellite Opportunities Conference held in Las Vegas, March 15-17.

Ted Anderson, president of the Tulsa, Oklahoma-based manufacturer, said the GLS-800 Series provides homeowners across the country access to satellite TV through a reception system that's both technically innovative and affordable.

"We've earned a reputation for technical excellence and affordability in the commercial market," said Anderson. "That same combination is now available to the home market with the GLS-800 Series, which offers more innovative features for the money than any other system."

The new system features single cable control. One cable connecting receiver to downconverter carries all power and control.

The system's GLR-808 receiver features crystal synthesized tuning for stability and automatic polarity control that locks the probe for each channel while correcting for skew. A digital indicator displays channel



selections on the contemporary-styled front, and a tunable IF filter on the rear panel allows terrestrial interference rejection.

The LB-808 remote control is an infrared wireless unit that provides full function operation. An optional feature allows use in any room in the house. It has tunable audio plus priority selection of 6.2 or 6.8 MHz.

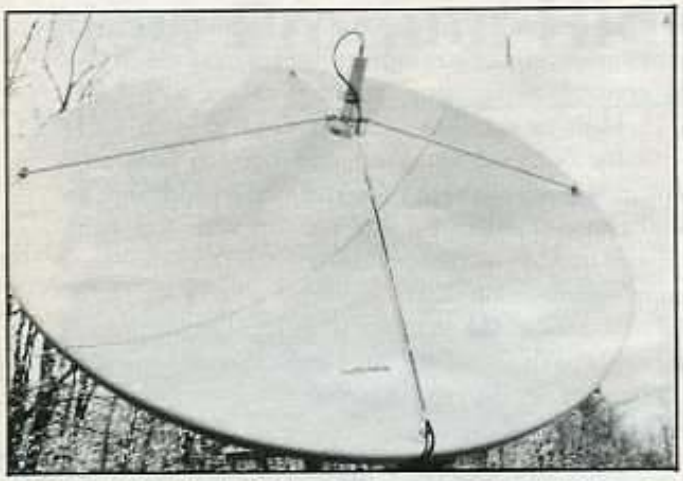
The LNA/polarizer features state-of-the-art design with direct-coupled input to eliminate waveguide transition loss. A new feedhorn optimizes the dish signal.

Automation Techniques' dish is one-piece spun aluminum. It is available in 6, 7½ and 9-foot sizes with sturdy polar mount and single-pole support facilities.

For more information, contact Ted Anderson.

Ted Anderson
Automation Techniques, Inc.
1550 North 105th East Ave.
Tulsa, OK 74116
(918) 836-2584

General Instrument Corporations



SHERBURNE, NY -- A complete new family of General Instrument TVRO systems including dish antennas, receivers, and mounts were shown for the first time at the National Satellite Opportunities Conference in Las Vegas on March 15, 16, and 17, 1983.

The deep dish antenna is available in 8, 10, 12 and 15-foot sizes. Sectionalized for ease of shipping, it can be assembled easily and quickly, and the sections are interchangeable. The antenna features short focal length design to provide low noise-temperature performance. The feed assembly is computer designed. The feed assembly requires no focal length adjustments. These rugged, lightweight antennas are covered by a five-year warranty.

The antennas are available with a variety of mounts featuring pedestal, post or tripod bases. All are designed for minimum assembly and easy installation. Standard and extra rugged versions are available.

Two different receivers are offered. The full featured microprocessor based unit allows instant satellite and channel selection using the handheld remote control and automatically selects appropriate polarity, audio subcarrier and format (mono/stereo).

This model is programmable with automatic channel and satellite selection up to six months in advance including parental "lock-out" of undesired programming on any channel regardless of satellite selected.

It also features a video graphic display on the TV screen for time, date, channel, satellite program directory, signal strength, and audio format.

The standard receiver offers features including: LED channel display, Matrix/discrete stereo processor scan tuning, signal strength meter, push-button polarization control, remote down conversion, convenience switch for controlling motorized actuators, and RF modulator.

For more information contact:

R.F. Systems Division
General Instrument Corporation
1 Taco St.
Sherburne, NY 13460
(607) 674-2211

National Microtech, Inc.

GRENADA, MS - Larry Ward, President of National Microtech, Inc. has announced the introduction of the Apollo-Z70 satellite receiver.

Latest in the Apollo product line, the Z70 receiver is well-equipped for the consumer who prefers a separate downconverter receiver, said Ward. It features step channel selection with automatic polarity switching, fine tune, polarity format reversal, scan tune, tuneable audio, signal strength meter, antenna control switches, invert, remote control option, and built-in approved modulator.

The Apollo-Z70 satellite receiver is housed in a sleek wood-grained cabinet with a black anodized aluminum face plate, Ward continued.

For more information contact:

Ken Brown
National Microtech, Inc.
P.O. Drawer E
Grenada, MS 38901
(800) 647-6144 or (601) 226-8432

Satellite America Marketing

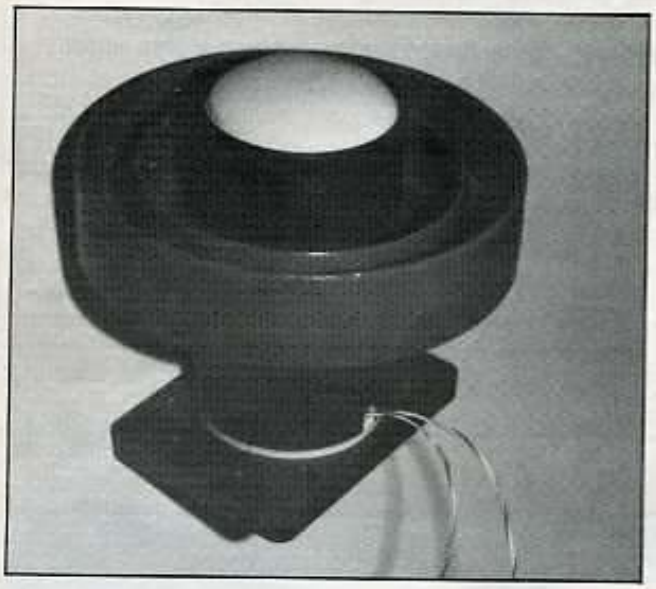
GRENADA, MS - Satellite America introduces a new receiver to its line - the SA-2000.

The new SA-2000 satellite receiver with infrared remote control was introduced to the industry during the recent CAN/AM trade show in Minneapolis.

Among the unit's many standard features are LED transponder selection, full stereo and matrix audio, and wireless remote control. The Satellite America SA-2000 features: reliability, styling, and broadcast-quality performance traditionally offered only on the most expensive electronics.

For more information contact:

Satellite America Marketing
P.O. Box 552
Grenada, MS 38901
(601) 227-1160



Polartron™ III

A new solid state electronic polarizer has been introduced by International Satellite Video Corporation. This polarizer features instant polarity switching, low power requirement (20 ma. typical), minimal insertion loss with up to 180° rotation capability, fully solid state with no moving parts, and compact size and weight.

The Polartron™ III can be powered directly from most receivers providing polarization switching. It is completely sealed from moisture for all weather use and comes with stainless steel mounting hardware.

For more information contact:

International Satellite Video Corporation
Box 5685
Orange, California 92667
(714) 633-1370

USS - Maspro Satellite Receiver SR-1

The SR-1 Satellite Receiver System incorporates the latest state-of-the-art technology for a growing industry from United Satellite Systems. The system consists of the SR-1 Receiver, the 100° K LNC, the 2nd Conversion Module, and all cables, connectors and hardware required to install the outdoor modules, including 120 feet of cable for the run into the home.

Also featured with the Receiver is an optional Full Function Remote Control which multiplexes a signal

through the house wiring, permitting control of the Receiver from any room in the house.

The model SR-1 receiver and remote control unit employ soft-touch push buttons that eliminate the need for fine tuning. LED readouts, dual conversion, and accurate signal meter and an integral modulator are just a few of the features, together with SAW filter technology and true quartz crystal tuning.

For more information contact:

United Satellite Systems
St. Hilaire, Minn. 56754
(218) 681-5615

New Stainless Steel Antenna

Believed to be the only satellite receiving antenna in the industry pressed from stainless steel, the Nova SS made by Kaul-Tronics, Inc., Lone Rock, WI, has met with fantastic acceptance.

According to the manufacturer, the Nova SS, which comes in a 7½' and 9' size, is mirror smooth, durable and has greater tensile strength than aluminum.

Kaul-Tronic sales have quadrupled since introduction of the stainless steel antenna. It come with either the prime focus or subreflector feeds.

For more information contact:

Kaul-Tronics
Route 1, Box 292
Lone Rock, WI 53556
(608) 583-4833

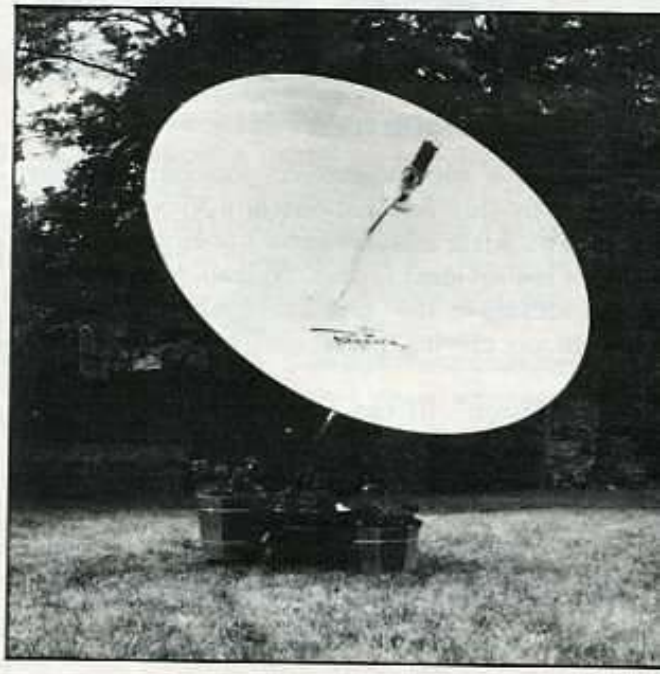
Regency Introduces Satellite Antenna

INDIANAPOLIS, INDIANA ..... Regency Electronics, Inc., announces the introduction of the Polaris SA 9000, an antenna for reception of satellite TV programming.

The Polaris SA 9000 features a new computer designed deep profile antenna. The compact design, 90 inches in diameter and the lightweight construction, .090 hard alloy marine grade spun aluminum, makes the SA 9000 ideal for home use. Additional features include accurate surface tolerance for enhanced picture quality, sturdy "button hook" feedhorn design, Chaparral Polarotor, polar mount for rotation of dish to receive all available satellites, and easy to install post mount.

For more information contact:

Regency Electronics
7707 Records St.
Indianapolis, IN 46226
(317) 545-4281



New Look In Receivers

GRENADA, MS - National Microtech, Inc. announced the introduction of the Apollo Elite receiver/navigator system.

Both the receiver and navigator have individual microprocessors with non-volatile memory.

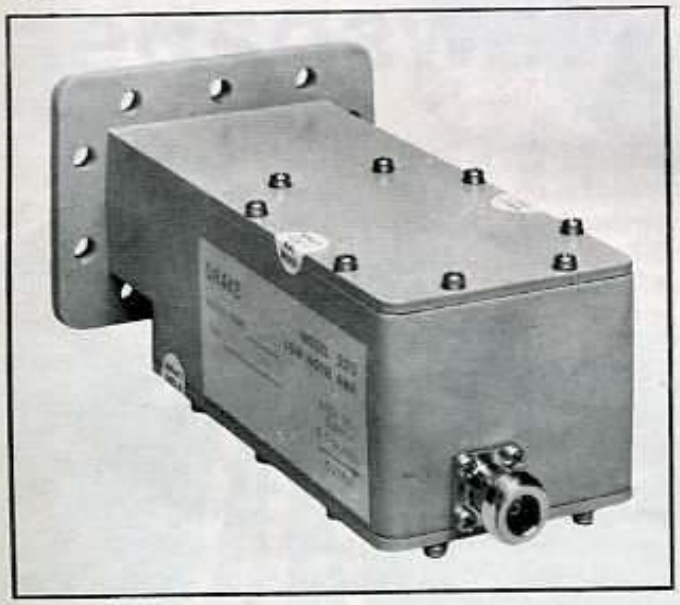
The receiver contains the channel changing control, volume level, audio format and AFC (Automatic Frequency Control). The navigator contains all satellite locations (programmable up to 100 satellites), and antenna drive function - with accurate return to all preprogrammed positions. The navigator can also be driven east or west manually to locate unprogrammed satellite positions.

Ken Brown
National Microtech, Inc.
P.O. Drawer E
Grenada, MS 38901
(800) 647-6144 or (601) 226-8432

New LNA From Drake

The R.L. Drake Company is introducing a new line of "C" band low noise amplifiers for satellite TV reception. Three models are being offered based on noise temperature specifications.

Model 2575 has a noise temperature better than 120 degrees Kelvin, 2574 has a noise temperature better than 100 degrees Kelvin and 2573 has a noise temperature better than 85 degrees Kelvin.



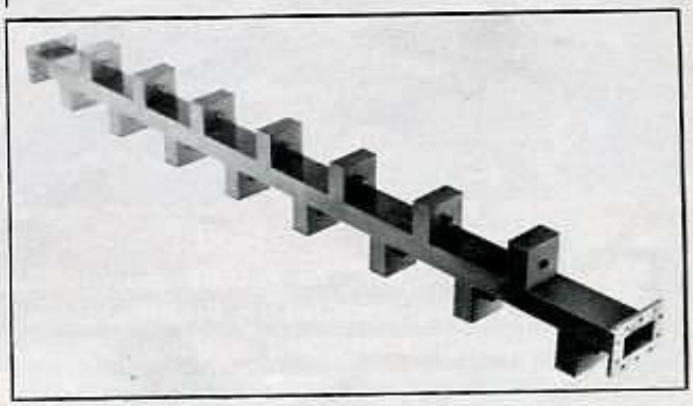
These amplifiers include an integral band filter and have a full 52 dB gain.

A test report is supplied with each unit.

For more information contact:

R.L. Drake Company
540 Richard Street
Miamisburg, Ohio 45342

Telephone Microwave Trap Blocks Up to 25 Frequencies



Type #4168 is a multiple frequency microwave trap for placing 50 dB notches on microwave telephone frequencies which wipeout TVRO channels. The typical 30 dB bandwidth is narrow (4MHz) to preserve transponder bandwidth.

4168 C is custom made to block customer specified frequencies and blockage of up to 25 frequencies can be provided.

The unit is designed in WR-229 waveguide but can also be provided with coaxial, type N connectors with DC power passing provisions.

For more information contact:

Emily Bostick
Microwave Filter Co., Inc.
6743 Kinne Street
East Syracuse, NY 13057
US toll-free 1 (800) 448-1666
(collect (315) 437-3953 in NYS/CAN/HI/AK)

News from Down Under
by Terry L. O'Connor

Satellite Technology Aids Chinese Newspaper

In Sydney, Australia, Sing Tao is a Chinese-language newspaper with worldwide networks. From its Head Office in Hong Kong, copy is transmitted to Branch Offices in Europe, U.S.A. and Australia for local printing and distribution.

Sing Tao has the largest circulation of any Chinese-language newspaper in Australia, with up to five thousand copies daily.

The Sing Tao organization recently installed modern space-age communications equipment in its offices at Goulburn Street, Sydney.

The equipment, which utilizes a series of photographic lenses, and works like a highly sophisticated facsimile machine, is a DACOM 300 Telepress system; the only one of its type in Australia. It is connected via (Telecommunication Commission) modem and landline to the Overseas Telecommunications Commission International Gateway Terminal at Broadway, Sydney. The system receives copy that has been transmitted via Intelsat IV-A (Pacific Ocean Satellite, Primary) on Transponder 7A from Hong Kong, and 9A from Sydney.

By placing film onto a revolving drum, the typeset pages are recorded in Sydney as full newspaper-size negatives which, because of their incredibly fine detail (particularly in the photographic reproduction), can then be processed 'in-house' and sent to a printer for platemaking and printing of the newspaper.

The entire operation, from receipt of the first twelve pages to distribution of the newspaper, can be accomplished in less than 10 hours.

A Director of Sing Tao in Australia, Mr. Lu Yong, sees the introduction of satellite technology as a great step forward for the newspaper. "We are now able to bring current news to our readers, in their own language", he said. "Operation of the system", said Mr. Lu Yong, "is extremely simple". Sing Tao has arranged with the Overseas Telecommunications Commission (OTC), for lease of a voice grade circuit from Sydney to Hong Kong. The circuit is, in effect, a hot-line - no dialing or cueing is required.

The Sing Tao operator on duty in Sydney can speak to their counterpart in Hong Kong by just lifting the telephone handset. Once the duty officer has arranged reception of the incoming data, the operator then only needs to flick a switch on the base of the handset to automatically convert the voice-grade circuit to data. The satellite transfer of the Sing Tao daily newspaper, from Hong Kong to Sydney, can then commence.

★ ★ ★

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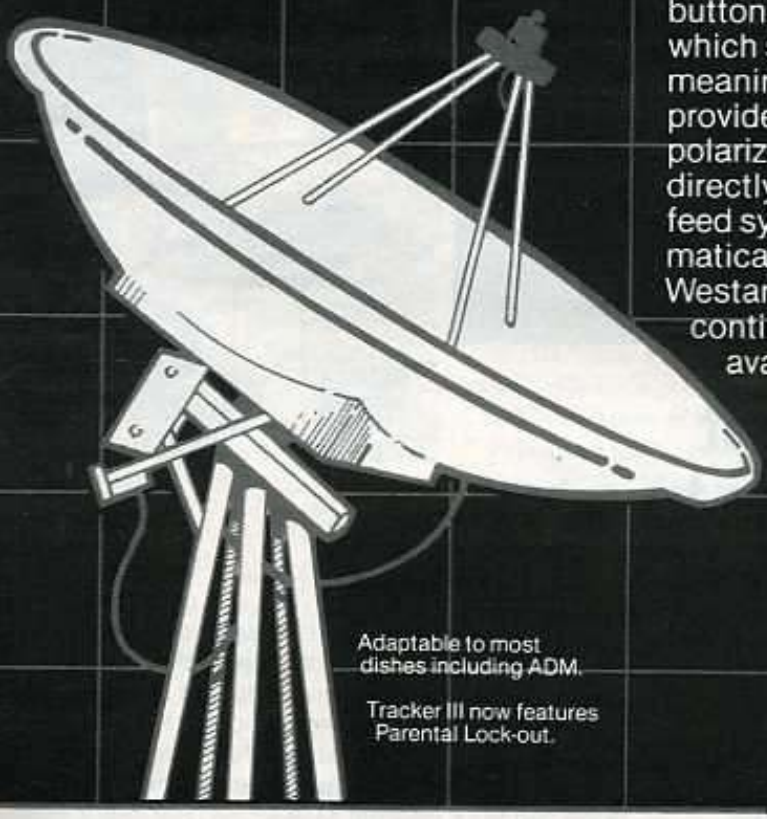

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Tracker III now features Parental Lock-out.

HOUSTON SATELLITE SYSTEMS INC.

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8000 Harwin, Suite 397
Houston, Texas 77036, 713-784-8953.

Available from the following distributors:
Capitol Electronics, Oklahoma City, OK (405) 721-7677
Destar Systems, Houston, TX (713) 776-0542
Delta Satellite, Grafton, WI (414) 375-1000
Echosphere, Englewood, CO 1-800-521-9282
Echosphere, Sacramento, CA 1-800-338-5477
1-800-338-5478 in CA
High Frontier Dist, Phoenix, AZ 1-800-382-0395
High Frontier NW Dist, Seattle, WA (206) 575-0660
I.V.C., N. Little Rock, AR (501) 771-2800
Kian, S.A., Mexico (78-62-03)
Lindsay America, Williamsport, PA 1-800-233-2303
Lindsay, Ontario, Canada (705) 324-2196
National Satellite, Latham, NY 1-800-333-4485
Odom Antennas, Beebe, AR 1-800-643-2950
Pen's Electric, Baton Rouge, LA (504) 664-4106
Quantex Satellite, Greenwood, SC 1-800-845-8952
Sat-Com, Kellyville, OK (918) 247-8048
Satellite Relay, Cardiff, CA (619) 436-1555
Satellite Video Dist, McAllen, TX (512) 682-4501
Satellite Video Systems, Kansas City, MO (816) 333-0315
Star-Com, Big Spring, TX 1-800-351-1426
1-800-592-1476 in TX
Tate Sat, Miami, FL 1-800-327-7272
Vicom-Nerad, Orange, CA (714) 997-9630
West Inc, Mt. Vernon, WA (206) 428-2810
Wholesale Elect. Supply Sat, Austin, TX (512) 478-9568
Wright Technology, Hattiesburg, MS (601) 545-2545

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We offer the components you can sell with confidence backed by the reputation of M/A-COM—the company at the forefront in satellite technology.

For quality products and a dealership second to none call your nearest M/A-COM distributor listed on the adjoining page. We can show you the wave of the future.

*Patent applied for

M/A-COM

Prodelin, Inc.

P.O. Box 100, Claremont NC 28610

Continued from page 30

News

R.L Drake Sues Channel Master. CINCINNATI, Ohio, August 10, 1983 -- Alleging copyright infringement and unfair or deceptive trade practices, the R.L. Drake Company of Miamisburg, Ohio today filed suit in United States District Court in Cincinnati against Channel Master Satellite Systems, Inc. and its parent company, Avnet, Inc., requesting a preliminary injunction which would prohibit Channel Master and Avnet from marketing a satellite television receiver which substantially duplicates one previously made by Drake for them.

Drake, which previously supplied a version of its ESR-24 receiver to Channel Master on a "private label" basis, is believed to be the largest manufacturer of satellite TV receivers for home use.

Among other things, Drake's suit alleges that a printed circuit board on which Drake claims copyright was directly copied in a similar unit now manufactured for Channel Master in Taiwan. The imported Channel Master receivers include a modulator which Drake believes does not have FCC certification. The imported receivers are also alleged to likely cause confusion and mislead the trade to believe that they are products made by Drake.

In seeking a preliminary and, ultimately, a permanent federal court injunction Drake has requested the court to prohibit Channel Master and Avnet from continuing to manufacture and sell satellite receiving components which substantially duplicate the appearance, internal construction and packaging of the receiver previously made by Drake as well as for the court to require them to deliver up for destruction all materials infringing Drake's copyright, including plates, molds, drawings and other materials used in manufacturing the imported receiver. The suit also seeks profits and unspecified damages.

Birdview Satellite Communications, Inc. (OTC), a designer and manufacturer of receive-only earth stations for the satellite television industry, reported sales of $4,911,171 with a net profit of $255,614 for the first quarter ended June 30, 1983, based on preliminary financial information. This compares with sales of $1,018,126 and a net loss of $864,343 for the same period last year.

Charles A. Ross, President of the Kansas based satellite communications company, said that Birdview now has a network of more than 500 dealers in 36 states to sell its earth stations to individual homeowners. Ross attributed the company's progress to a strong market demand and improved efficiencies in all areas of operation.

Private Cable Opportunities Teleconference, will be held Friday, October 7, 1983. Ten top experts on Private Cable have been gathered together so that you may evaluate, question and learn about the tremendous potential of owning your own private cable system. Leaders in the private cable industry have been especially chosen to sponser the event and provide the downlink in your city.

They will show you the equipment in operation and will even be able to answer any questions you may have via a coast-to-coast telephone link.

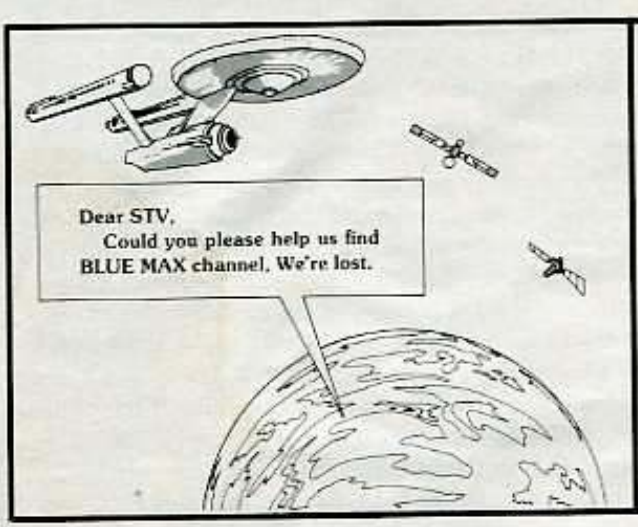
The panel of speakers for this teleconference includes such notables as Prof. Taylor Howard, Pat Weisner, Paul McKenney, Don Burns, Carl Feister, Terry Easton, Guy Davis, John Quarrier, Dr. Ed Meek and Dr. Dennis Tosh.

Some of the program highlights of this one day event will include an introduction to private cable with an overview of the satellite technology involved, legal aspects, equipment needed, financial considerations and marketing. The session will conclude with a panel discussion & summary.

This represents a unique example of the benefits of satellite technology thru teleconferencing and if you are interested in learning more about the private cable industry you should attend this conference.

For more information contact your local private cable affiliate for details and registration.

Continued on page 100



Uplink Downlink

LETTERS TO THE EDITOR

We get questions and sometimes provide the answers

Dear STV Magazine,

I am the proud new owner of an 8' dish which has had me feeling like "Christmas in August".

I have a question which I hope you or some of your readers could answer. What time (M.D.T.) is the Carson Show fed to New York for editing and on what satellite? I have been searching but to no avail.

Please Help!

Sincerely Yours,
W.M Breckon
Hobbs, NM 88240

Sorry, Johnny Carson is both filmed and edited in L.A. and only the edited version is uplinked on the satellite. Originally the show was relayed to New York for editing but that was discontinued about two years ago.

Dear STV,

I would like a one year supply of your Satellite TV Magazine. Also I would like a copy of your Satellite Aiming Guide.

I am in the process of constructing my own dish: I wonder if you would be kind enough to give me some names of dealers who deal with the individual and not the company. I would like to deal directly with them, in order to obtain the electrical parts to construct my dish.

Thank you for your prompt atttention.

Arthur Ryan
Calgary, Alberta
Canada T2A 4S6

Take a look at the North American TVRO Dealer Listing in this magazine. They are usually several Canadian dealers listed who can supply components to the consumer. Good luck with your project.

Gentlemen:

Here is a followup on the Bill Barr aticle in your May issue.

I sent $5.00 to F & C Electronics for the PC board. Received my money back from them. Apparently Mr. Barr **did not send** the artwork for the PC board to them. And-- they have been unable to contact him.

As this circuit is so simple a custom PC board could probably be bypassed.

International Crystal circuits sent a bundle of papers but no direct answer as the exact unit required. As near as I can make out Catalogue # 035217 will do for the oscillator at $25.20 price, 9.5 to 15 volts DC required. (Dunno about postage)

Mini Circuits Laboratory at 2625 E. 14th Street, Brooklyn New York - 11235 sent the following:

SBL-1 1- 9 pieces 11.95

Add $3.75 for processing above order and shipping.

Please publish this. Should short circuit the time required for somebody attempting to duplicate Mr. Barr's work.

Sincerely,
Forrest Elliot
Oceanside TV Antenna SVC
Port Orford, Oregon
97465

Bill expresses his apologies and regrets that a lack of time is his only excuse. Thanks for the helpful tips.

Dear STV,

I enjoy your magazine very much. Please send me the name of a company that I could purchase satellite systems from. I want to form a company & lease our equipment to local hospitals motels and etc.

Thank You,
John Tedesco
Englewood Cliffs
New Jersey, 07632

The only advice I can offer to you is to drop a line to each of our advertisers. I obviously cannot recommend one company over another.

Dear STV,

I conclude from reading your magazine that you are pro-illegal descrambling devices.

In fact, I wonder if you are funding efforts to violate patents, etc.?

Theft of service is, after all, Theft. See attached article.

I called & left a message for you a couple of weeks ago without a response.

Incidentally, I think your comments on p. 43 of your Mar/Apr issue stating the "digital audio encoding was easy to defeat" is yellow journalism at its best.

Regards,
Dave Beeching
Oak Communications Inc.
Satellite Systems Division
Crystal Lake, Illinois 60014

I find that very often people tend to read articles and comprehend only what they wish to comprehend. My position on descramblers is simple - make descramblers and programming available to private terminal owners at a reasonable price - or face the consequences. Why should cable companies have a total monopoly when there is an alternative. Private terminal owners do not represent a threat to cable companies and represent only 1% of the total market and the majority of these systems are out of reach of cable systems.

*I would also dispute your claim of "theft of service" and I invite you to point out one - **just one** case where a private individual has been prosecuted in a U.S. court for theft of service using a TVRO for personal use.*

The article which you sent me refers to Canadian Bars and Taverns which use the signals for commercial gain - Hardly the same scenario as a private individual. Besides which - who in their right mind would hold up the CRTC, CBC or the Canadian Football League as shining examples of intelligent policing making bodies.

You have misquoted my comment in Mar/Apr STV Mag (page 43) - the sentence actually

reads "The sync suppressed, inverted video with digital audio encoding was **apparently reasonably** *easy to defeat." The two missing words do tend to modify the tone of the meaning and you and I obviously have a different understanding of the term "yellow journalism". If a guy working in his basement can develop a device for a cost of about $150.00 which descrambles the Oak Orion System - I can only assume that it was "apparently relatively easy to defeat".*

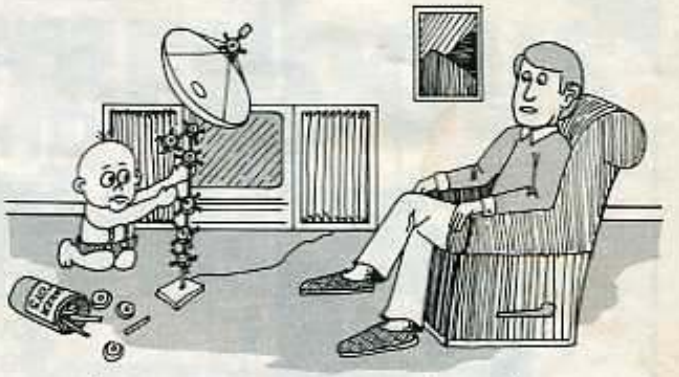
We are apparently both very busy as I have returned your calls (ask your secretary) and left messages. Speaking of lack of response - I also left a message for Mr. O.J. Hanna in your Chicago office and he didn't call back either.

Uplink-Downlink is devoted to letters from our readers. We welcome questions, criticisms, comments or anything else you may feel is relevant. Unfortunately, we cannot publish every letter. However if you enclose a self-addressed stamped envelope, we will send you an answer if it is not published here. Please mark on the outside of any letter "Uplink/Downlink".

If you have noticed, this column has a small cartoon beside the title with a different caption each month. We welcome suggestions for this caption from our readers and if we pick the one you send in, we will send you $10.00.

Address your letters to:

Satellite TV Magazine
Uplink/Downlink
P.O. Box 2384
Shelby, NC 28150



"THOSE TINKER-TOYS ARE REALLY GETTIN' FANCY THESE DAYS!"

COTHRAN

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News

Continued from page 95

Data recently released by the FCC indicates that video transmissions are increasing on the available transponders of the C-band Domsats, but there is still plenty of space available. Here is a break-down of transponder activity as reported by the FCC Field Operations Bureau. This data is based on observations made during daytime hours from June 21 thru 29.

Satellite	Inactive TR Now	Inactive TR Previous	Active TR Now	Active TR Previous
*Satcom 1R	8	13	3	1
Satcom 2	15	13	3	2
Satcom 3R	0	0	24	24
Satcom 4	15	16	9	8
Satcom 5	15	18	0	0
(* previous report monitored Satcom 1 which has been replaced by 1R.)				
Comstar 1/2	13	17	3	0
Comstar 3	6	6	5	5
Comstar 4	11	10	4	0
Westar 2	5	4	0	1
Westar 3	2	1	2	3
Westar 4	10	11	9	8
Westar 5	7	9	13	11

This shows an increase of 9 TV/FM transponders over last quarter. However there are still approximately 40% of the available transponders not in use at this time.

Turner sues NBC. Turner Broadcasting Systems, Inc., and the Atlanta Braves Major League Baseball Club has filed suit in Atlanta against NBC asking for declaratory and injunctive relief to enforce their right to televise, or assign their right to televise, the 1983 National League Championship Series in the Atlanta area. The Braves Club, which is wholly owned by TBS, has the best record in baseball and appears headed for the playoffs and possibly the World Series. NBC has the contractual rights to televise the league's playoffs but TBS claimed a team's flagship station (which is WTBS for the Braves) has the right to televise pre-World Series championship playoffs in its local market.

News

Oscar 10 is up - but not exactly where it was intended to be. After the kick motor failed to place Oscar 10 into parking orbit, sources indicated the satellite was bumped from behind by the 3rd stage of the Ariane launch vehicle. The bird is now in what has been termed a "minimally useful" orbit.

The satellite's attitude on separation from Ariane's third stage was initially correct, but "very probably the 3rd stage caught up with the satellite after separation." The most likely reason for this seems to be higher than expected residual thrust from venting liquid oxygen. Engineers speculated that the vents were left open long enough to give the 3rd stage enough extra boost to hit Oscar's kick motor.

Vern Riportella, Exec. V.P. of U.S. Amsat, said that there was no proof that jarring in orbit caused the malfunction of the kick motor, but that's the most likely cause. After separation, the 3rd stage apparently bumped the satellite causing Oscar to start tumbling - delaying first firing of apogee kick motor for 3 weeks while engineers fought to control the bird.

Finally the satellite was stabilized and the first attempt to fire the kick motor was made unsuccessfully. Oscar will have to stay where it is, in orbit with an apogee of 35,000 km and a perigee of 3900 km with a 26 degree inclination to the equator. The planned orbit would have given Oscar a perigee of 1500 km and an apogee of 36,000 km with a 57 degree inclination. The higher planned orbit would have made Oscar hang longer over northern hemisphere where the majority of radio amateurs live. Riportella said, "The orbit's absolutely terrible and we've been grievously damaged. We've had a serious case of whiplash."

"Domsat" system to go into operation on Westar 4. The Democrats will be using satellite technology soon to transmit interviews with Congressmen to local TV stations. Interviews won't be transmitted live however. The TV station will call the Congressman and interview him by phone, then the videotape of the Congressman's answers will be transmitted to the TV station. Representatives and Senators will pay for the transmissions out of their tax-financed office accounts.

Hughe's Galaxy One, is up and running. However, one problem has already cropped up. One of the 4 receivers on the bird is currently suffering a severe drop in power. This is a spare receiver, and it leaves one or more spares to cover the two main receivers. A Hughes spokeswoman said that the company was "trying to isolate the problem but we're not currently optimistic about regaining operation of the receiver." She called the malfunction "unusual" but not serious because, "The other 3 receivers have been working fine and this loss will have absolutely no effect on operation of the satellite. We would have to lose an additional 2 [receivers] to have any impact."

Harris Corp. Comsat has awarded Harris Corp. a $100 million contract to provide earth stations and maintenance for NBC's new Ku-band satellite network. Harris will be responsible for the installation of 23 satellite receiving stations at NBC affiliates, 2 transmit/receive stations and one master station to be located in NYC. As the network expands Harris will supply equipment for around 180 receive only and transmit/receive earth stations. System should be fully operational by 1985.

Continued

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News

AT&T returns to space. The company which launched the U.S.'s first active communications satellite finally has a commercial bird of its own. Launched from Cape Canaveral July 28, Telstar 3-A is the first of 3 being built to replace the aging Comstar series. The other 2 will be launched in August 1984 and May 1985 pending FCC approval. Each bird has 30 transponders, 24 regular and 6 spares.

Besides being a big first for AT&T (owning instead of leasing), the Telstar is a big first for Hughes Aircraft, the company which built the AT&T satellite. This is the first bird for Hughes to use solid state power amplifiers in addition to the standard traveling wave tube amplifiers. The big advantage of the solid state amplifiers over tubes is greater reliability and longer life. The life expectancy of the Telstar is 10 years rather than the usual 7-8 years. Telstar carries 18 solid state power amplifiers and 12 TWTAs. The solid state amplifiers were designed by Bell Labs. After testing at 66°W, Telstar will be drifted to its operational slot at 96° W.

GTE Spacenet. First Spacenet satellite is expected to enter service in Spring of 1984. GTE is beginning construction of its' earth station complex at San Ramon, California. When completed, the center will have three 13 meter and two 9.2 meter antennas.

Continued

No holes barred.

Wilson Microwave Systems gives you a satellite system with no holes. Every component is labeled Wilson and receives the full backing of our outstanding warranty program and direct factory support.

A Distributor's Dream.

If you're tired of double and triple sourcing products to make a single system, Wilson is the answer...the quality answer. With dishes of die-stamped steel that are dip coated and baked to ensure lasting durability and color. And with linear components that provide the most reliable pictures your customers have ever seen.

Infrared Selection.

Wilson's new YM-1000 Receiver System features a portable Infrared Channel Selector that controls what some people already believe is the most beautiful receiver in the business. With channel scanning, automatic polarity changing, AFC, volume and more built-in.

Capture the profits.

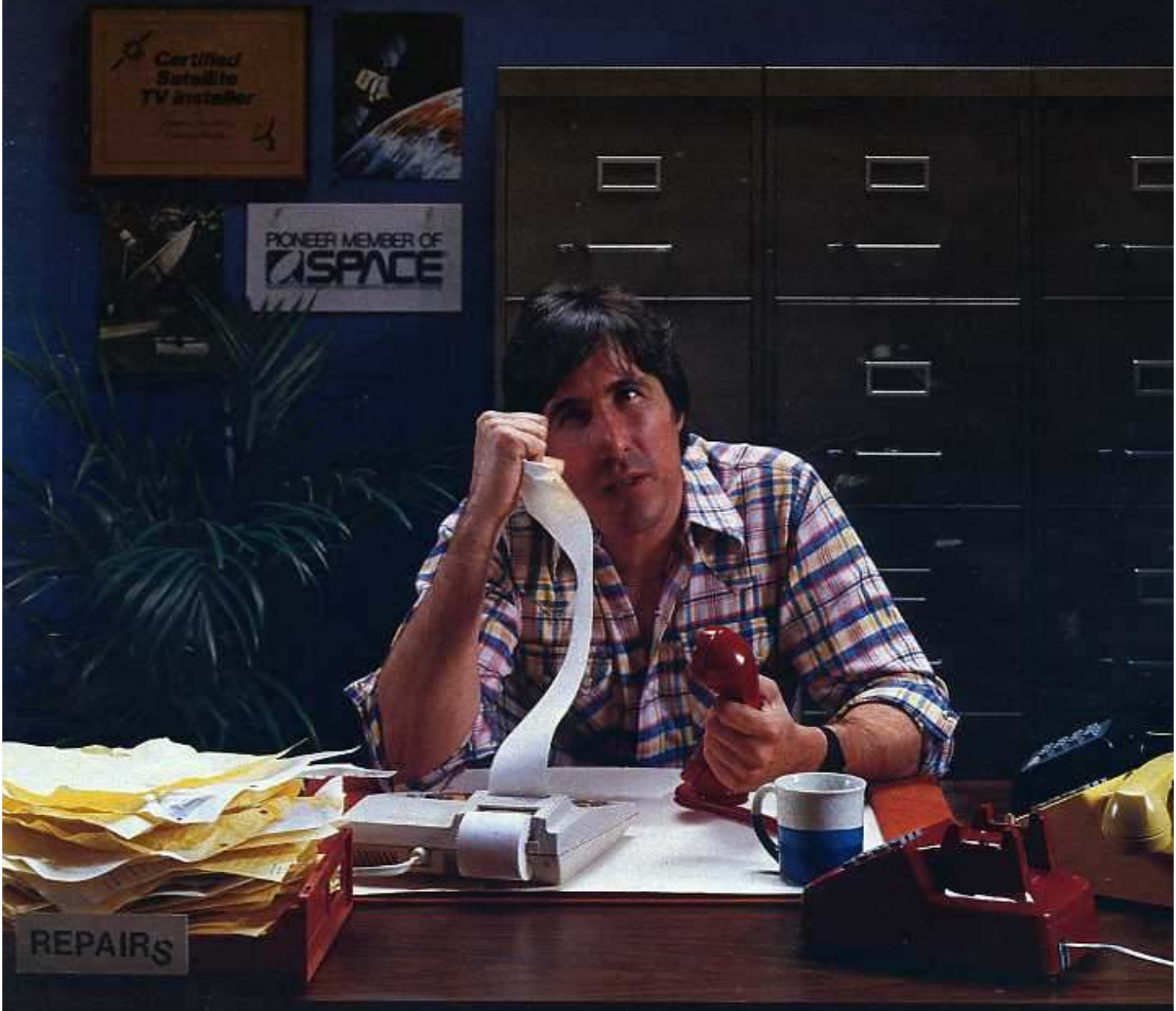
If you would enjoy the profits you could make from representing the most complete manufacturer in the satellite business, give us a call, toll free. We'll tell you the complete story...no holes barred.

WILSON MICROWAVE SYSTEMS, INC.

4286 South Polaris Avenue
Las Vegas, Nevada 89103

Call TOLL-FREE
1-800-634-6898
IN NEVADA:
1-702-739-7401

Rather be selling than servicing? Call Dexcel.



Handling TVRO returns and service calls wastes time and eats profits. That's why Dexcel built the DXP-1100 to be the most dependable receiver system you can buy, with fewer than 3% returns.

And Dexcel backs it up, by offering you the **only** two-year warranty on the market.

DXP-1100 includes:

- Compact LNC for easy installation
- Stereo and modulator built right into the receiver
- 125 ft of cable with connectors
- Standard remote control
- Best value

Call today for the distributor nearest you. Gould Inc., Dexcel Division, 2285C Martin Ave., Santa Clara, CA 95050. TWX 910-338-0180. **Phone 408/727-9833, extension 37.**

GOULD
Electronics

News

Cuba. Cuba has filed an advance notice of intentions to launch and operate a communications satellite with the International Telecommunications Union. The Cuban satellite would be designated STSC-1 and would provide 6/4 GHZ national and regional international telecommunications service over an area including all of the Caribbean basin as well as North and Central America. The satellite is scheduled to be launched in March of 1988 according to the application. Cuba said it expects to use an orbital slot at 83°W for the satellite.

Continued from page 10

Is it any wonder that Dr. Taylor Howard said, "It is the worst single thing I have ever read"? We are in complete agreement. "Channel Guide" had more than ample opportunity to make a more accurate transcription of the recording supplied to them by Conference Cassettes.

The Colorado newspaper omitted altogether the more subtle points of his oratory such as "Caveat Emptor". Wise advise ignored. Latin cannot be included in the Rocky Mountain High curriculum. My own advise is "Recte Factum" Denver (Do it right!).

The main problem is a lack of both practical and theoretical knowledge. In a recent telephone conversation with one of their staff members, he told me they only had one TVRO system between them all. Even expert Tay Howard said at CAN/AM recently how he used a TVRO system weekly, just to keep his hand in.

Sir Winston Churchill was a brilliant orator and Dr. Howard exhibits some of that brilliance. If ever Sir Winston wanted to reduce a situation to true size, he would either make an intential error in description or pronunciation. In just the same way Tay Howard spoke of "Boulder or Denver". Outstanding Sir!

He summons in me all the feelings demonstrated by Hart for his Law Professor, now on SHOWTIME, SATCOM 3, monthly. That brings us right back to programming once again.

Nashville sounds just great for the next STTI Show. Do come and see us, for the "Wolfpack" will be there in force - you all!

★ ★ ★

HOT LINE BULLETIN

There is an unconfirmed rumor that G.E. may be negotiating to buy Harris Corporation. As of presstime - spokespersons for both companies could not be reached for comment.

ABC - TV's plans to change network distribution from terrestrial relays to satellite have fallen through. The high cost of the change-over has forestalled the plan according to an ABC spokesperson.

As of presstime only two video transponders were active on the newly launched Galaxy I. TR-6 & TR-20 are both Spanish speaking networks.

Oscar 10, the amateur radio satellite launched by the French Ariane launch vehicle settled into an unusual orbit when the "bird" was bumped by the third stage of the Ariane L6 rocket. The orbit has an elliptical path ranging form 3,951 to 35,505 km. Oscar 10 was operational as of press time and reports were very favorable.

A new programming guide entitled "Satellite Dish Magazine" will be introduced at the SPACE Show in Orlando. The bi-weekly publication will contain programming for all scheduled services plus regular reviews and previews of movies and special events. The full color slick magazine will be published in Grenada, Mississippi.

North American TVRO Dealer Listing

ARKANSAS

McCullough Satellite Equipment
Route 5, Box 97
Salem, AR 72576
(501) 895-3167/3318
Manufacturers of Antennas
Receivers - Distributors of all
TVRO supplies

KENTUCKY

Starpath Corporation
2532 Regency Road
Lexington, Kentucky 40503
(606) 276-4435
Complete TVRO Wholesaler, Basic Systems,
Avantek, California Amplifier, Starpath
"Super" Dishes, Master Distributor for Auto-Tech

PENNSYLVANIA

Northern Lights Satellite
P.O. Box 1234
Clearfield, PA 16830
(814) 765-0111
Distributor for Odom
Antennas In The
Northeast

CALIFORNIA

Space Age Video Distributors, Inc.
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San Jose, CA 95124
(408) 559-8812
The wests largest satellite display. We distribute, satellite microwave, phones, full video.
Decoders Available for THE BLUE MAX

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Norfolk Electronics
P.O. Box 91 - 55 Railroad Ave.
Garnerville, NY 10923
1 (914) 947-1501/1502
Miniature Electrolytics - Axial-Radial
Any Voltage - Any Quality -
Name Brands Call For Pricing

SOUTH CAROLINA

Banks Satellite Systems, Inc.
1720 Bypass N.E.
Greenwood, SC 29646
1 (800) 845-1104/in SC 1 (800) 922-1601
KLM, Drake, Luxor, Eclipse,
Prodelin - Best Quality at Lowest Prices
We Service

CONNECTICUT

A R C Communications
P.O. Box 250
Northford, Conn. 06472
(203) 484-2144
Sales - Service - & Installation
Commercial & Residential Systems
Specializing in HOME Satellite Reception

NORTH CAROLINA

Microwave Entertainment
Drawer 268
Blowing Rock, NC 28605
(704) 264-6340
Satellite Earth Stations
Residential & Commercial Systems
Authorized Program Sales

SOUTH CAROLINA

Stellarview Satellite Systems, Inc.
Suite 1, Pavilack Square
Surfside Beach, SC 29577
(803) 651-6880/(803) 238-1098
Closed Circuit Teleconferencing
Wholesale Satellite Distributor
Member of SPACE

FLORIDA

Electrovision Satellite Systems
27 E. Fowler Ave
Tampa, Fla. 33592
(813) 986-3917
Complete TVRO Satellite Systems - Sales &
Service - Comm./Resi. - Specialized in Caribbean - South & Central America Installations

OHIO

Invictus Telecommunications Inc.
807-F Loveland Madeira Rd.
Cincinnati, Ohio 45140
(513) 683-SATV
Complete Systems & Service - Residential
& Commercial Teleconferencing
Services - Wholesale & Retail

TENNESSEE

Cox Enterprises
Rockwood, Tennessee 37854
(615) 354-3471/(615) 354-4312
Call us today for Complete Wilson Systems,
Seavey Feedhorns, California Amplifier LNA's,
Wilson YM 1000 Receivers
Contact Tom Cox, Dr. Charles Mead

IDAHO

Satellite Television Inc.
1108 South Main P.O. Box 817
Pocatello, Idaho 83204
(208) 232-1926
Dexcel, Auto-Tech, Luxor, Drake,
Sat-Tec, Amplica, MTI Remote,
Janeil, Complete TVRO Supplies

OREGON

S.R.C. Industries
773 S. Oregon St.
Ontario, Oregon 97914
(503) 889-7261
Auto-Tech, Sat-Tec, KLM, Dexcel, DX Ant.,
Locom, Skywalker, Beach Craft, Chaparral,
Stardish, Mfr. Spun Metal Ant. Systems

TEXAS

Video Signals
P.O. Box 72
Wallisville, TX 77597
(409) 389-2214
Distributors of Dexcel, Luxor, KLM,
Chaparral, Sat-Tec, MTI, Paracom, Janeil,
Fiberglass Plastics, DH Spun Aluminum

VIRGINIA

Starpath Corporation
2532 Regency Road
Lexington, Kentucky 40503
(606) 276-4435
Complete TVRO Wholesaler, Basic Systems, Avantek, California Amplifier, Starpath "Super" Dishes, Master Distributor for Auto-Tech

CANADA

Commander Satellite
4369 Rathkelle Street
Mississauga, Ontario L5M 2B5
(416) 826-8066/821-2753
Manufacturer of Spun Aluminum Antennas and Distributors of Satellite Components

CANADA

Open Sky Satellite Inc.
445 Stradbrook Ave. at Osborne
Winnipeg, Manitoba R3L-0J7
(204) 477-1824
Canada's Satellite TV Parts and Supply depot. Send for catalogue and prices - Dealer Inquiries Welcome

WASHINGTON

Evans Satellite TV Systems
1721 Simpson Ave
Aberdeen, WA 98520
(206) 532-8858
Affordable Home TV for Washington State

CANADA

Houssen Tech. Inc.
Box 2126
Moncton, N.B. E1C-8H7
1 (506) 534-2530
Mfg. Fiberglass Dishes - Distibutors of TVRO Equipment, Designers & Installation Dealers Wanted

CANADA

Performance Plus
181 Bentley St.
Markham, Ontario L3R-3Y1
1 (416) 474-0227
Lowrance, Drake, Triple Crown, Luxor, Complete Systems Sales & Service
Dealer Inquiries Invited

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2532 Regency Road
Lexington, Kentucky 40503
(606) 276-4435
Complete TVRO Wholesaler, Basic Systems, Avantek, California Amplifier, Starpath "Super" Dishes, Master Distributor for Auto-Tech

CANADA

A Division of Satellite International
EST Systems (Earth Sat-Tech)
3791 MacKintosh Street
Halifax N.S. Canada B3K-5A7
1 (902) 453-0826
SA-100, SAT-TEC, SA-1000, SA-2000, Avantek LNA's, Prodelin, EST - 10' Antenna

CANADA

Satellite Communications
240 Bayview Dr. #2
Barrie, Ont. L4N 4Y8
(705) 737-5243
Mfg. of Fiberglass Antennas & Tracking Systems - Complete Packages

Dealer listing space available, 2" × 1" column, seven lines of text. Price is $50.00 per issue. All copy must be received by the 20th of the second month preceding cover date. Send copy to: **Post Office Box 2384, Shelby, NC 28150.** Tel. (704) 482-9673. **Attn: Lynda Carter**/Advertising Manager.

News

Japan. The Japanese have launched two communications satellites, the first in orbit to use 30/20 GHz. The first was launched in March and the second Aug. 6, from Japan's National Space Development Agency's launch center at Tanegashima. The major subcontractor for the satellites is Ford Aerospace & Communications Corp. The two satellites have 6 Ku-band and 2 C-band transponders. The satellites are designated CS-2A and CS-2 and are located at 130° East and 136° East respectively.

Anik D. All three major networks and PBS will be heading north via Anik D starting Sept. 1. This move should help Cancom which was losing some $500,000 in Canadian funds per month earlier this year. Cancom believes the addition of CBS, ABC, NBC and PBS will add greatly to the attraction of its existing feed of 4 Canadian signals. Cancom expects to add an additional 1.2 million subscribers to its list of 200,000 current subscribers by offering these new services. The transmissions will be Oak Orion encrypted and downlinked to about 1,000 earth stations, mostly small cable systems and LPTV stations.

The Canadian Radio - TV & Communications Commission has approved Cancom's use of the U.S. signals despite some objections from Americom networks.

★ ★ ★

"WELL, GUESS I WON'T HAVE TO WORRY 'BOUT MY HOUSE BEIN' THE ONE STRUCK BY LIGHTNING!!"

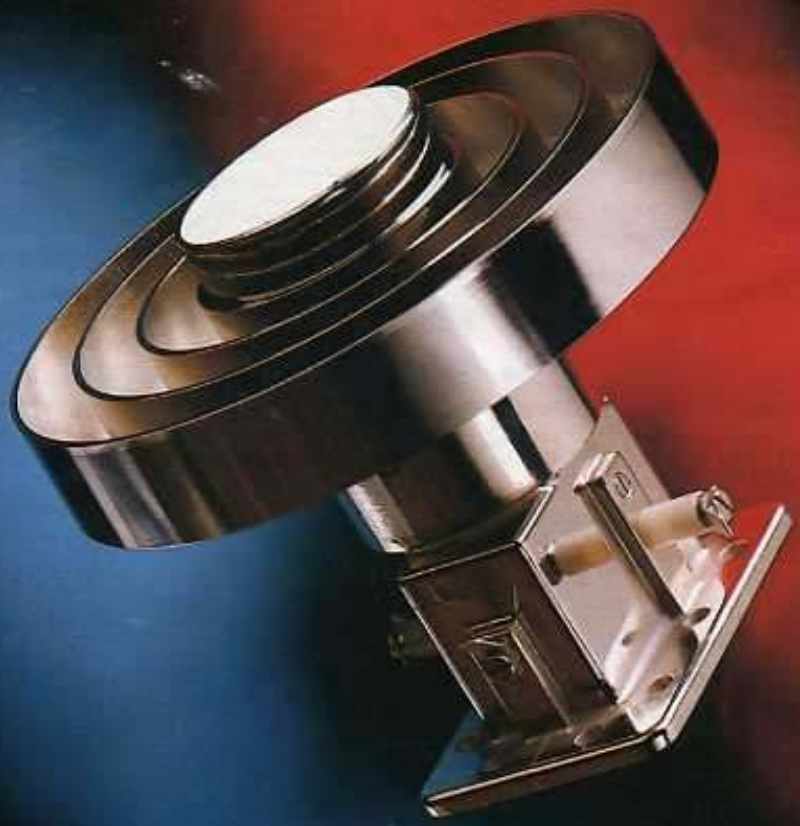
COTHRAN

CORRECTION

On page 56 in the September issue of STV Magazine, Chaparral Communications inadvertently made a mistake in their advertisement. Chaparral stated that their deep dish ring increased the "carrier to noise ratio by .9 dB which is the equivalent of replacing a 120° LNA with one that's 85°". It should have read "That's the equivalent of replacing a 120° LNA with one that's 100°". Chaparral Communications asked us to print this correction and we applaud them for their honesty.

ADVERTISERS' INDEX (In Alphabetical Order)

YOUR TVRO SYSTEM IS STATE OF THE ART.



What about your polarizer?

Only one polarizer offers you the reliability of digital solid state at low cost: M/A-COM Omni Spectra. With no moving parts to freeze up or meltdown – no motors, rotors or gears – the low loss M/A-COM Omni Spectra polarizer offers you top quality reception, whether you're in Anchorage or Anaheim.

Even in the harshest environments, this polarizer is completely phase and insertion loss stable. But that's just the beginning.

Because it's digital solid state, this polarizer never needs adjusting, after installation. It even features an adjustable scalar feed to acheive maximum gain from every antenna. Satellite skew is automatically compensated for.

Omni Pulse Decoder
Low cost receiver compatible adapter
Part # 4850-4004-00

In-line design makes the M/A-COM Omni Spectra polarizer easy to install. And with low cost electronic adapters, it's completely receiver compatible.

Best of all is the backing of an industry leader: M/A-COM Omni Spectra. For the name of the authorized dealer near you, call (603) 424-4111 or write: 21 Continental Boulevard, Merrimack, NH 03054.

M/A-COM Omni Spectra

M/A-COM OMNI SPECTRA, INC.

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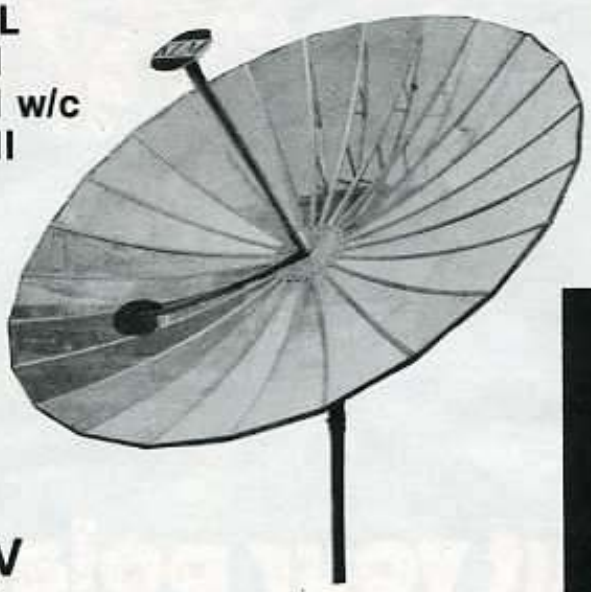
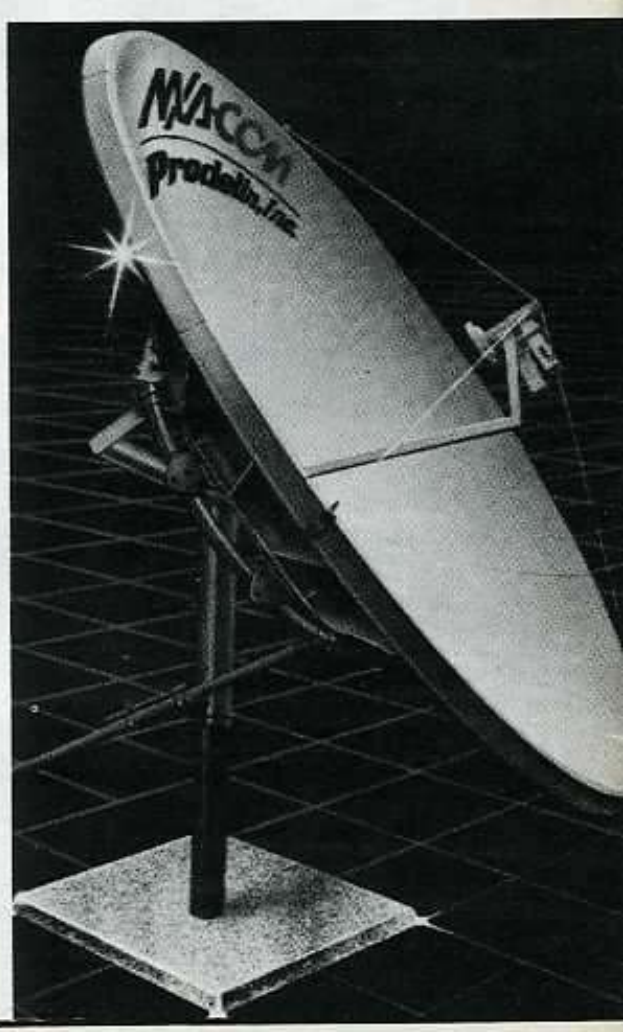


KLM RECEIVERS, ANTENNAS AND COMPLETE SYSTEMS

***Prodelin* ANTENNA**



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Join the Satellite America Revolution

Horton Townes—Chairman, Satellite America (Treasurer and Director of SPACE) Seated.

Dave Fedric—President, Satellite America (Satellite Digest 1981 Man of the Year)

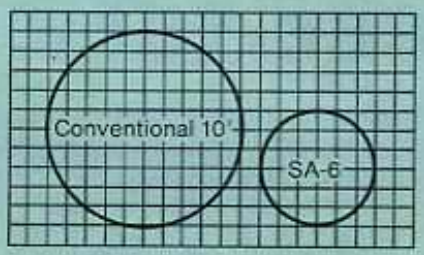
Satellite America leads a new revolution in small dish antenna development. This major advancement has dramatically expanded our market by substantially reducing retail prices of quality satellite systems. Satellite America technology now makes it possible for small six- and seven-foot antennas to deliver quality video coast to coast.

Because these pioneering developments by Satellite America have reduced equipment and installation costs, our distributors throughout the nation are enjoying tremendous increases in sales and profits.

Our SA-6, SA-7 and SA-10 antennas incorporate our new *DualReflect*™ feed which relocates the LNA *behind* the dish where heat and rain are no longer major factors in system performance. Although competitors may try to copy it, only Satellite America offers the true *DualReflect*™ Feed.

Our SA-6 and SA-7 antennas are of one-piece fiberglass construction with a special reflective surface that maximizes efficiency. Our SA-10 antenna is formed of eight thermo-compressed fiberglass panels that are perfectly matched for broadcast quality reception. The mounts on our SA-6, SA-7 and SA-10 offer similar improvements, making them the finest engineered and fabricated steel mounts available anywhere. For example, our new *PowerRing*™ on the SA-7 and SA-10 mounts includes a declination adjustment for the most precise and stable polar mount movement on the market.

The dramatic size reduction of our six-foot antenna compared to a ten-foot model is clearly shown in the graph. You can see why wind loading is reduced to a manageable level for most applications and why consumer acceptance is so much better.



Our receiver technology is just as exciting. Our innovative new SA-1000 receiver is the first of a new generation of satellite receivers to come from Satellite America. LED tuning, push button controls, stereo and "high-tech" styling are the ingredients making this the industry's finest value.

But products alone do not define our company. Our total concept of integrated marketing, advertising and logistical support sets Satellite America apart. In a few months, Satellite America has become one of the largest satellite system suppliers in the world. We believe we supply more satellite systems than anyone else in the U.S.A. and we know ours look the best.

Beyond that, our pricing is revolutionary, enabling you to realize even greater sales and profits. No one but Satellite America offers such low pricing for quantity buyers. And this translates into growth—unprecedented growth. That's why we ask you to join us. Be a part of this growth. Call today and secure a dealer or distributor relationship for the future. Satellite America will be there leading the way.

Sincerely,

David M Fedric

Dave Fedric, President

Horton Townes, Chairman

SATELLITE AMERICA

MARKETING, INC.

...entertaining new ideas

P.O. Box 552 · Grenada, MS 38901 · Phone: 601/227-1820 · Telex: 534-068 · A subsidiary of Satellite America, Inc.

WORLDS OF ENTERTAINMENT

Now, you can enjoy over 60 television channels with Lowrance Earth Station/System 7 Receiver.

Today, television and stereo programming is so diverse — so complete — it's no longer enough to have access to only a few channels.

With the magic of satellites, you can receive more than 60 channels of television and over 20 channels of stereo directly into your home. Including first-run movies, sports events, special children's shows, religious programs, news, live coverage of Congress, farm reports — and much, much more.*

It all comes from a satellite earth station — consisting of a dish antenna, amplifier and satellite receiver. The station picks up signals from satellites thousands of miles overhead and converts them into television and stereo for you to enjoy. And it's surprisingly affordable. (Systems start as low as $2,000.)

The most advanced receiver on the market today is System 7, made by Lowrance Electronics. We supply the satellite receiver, and our distributors add a dish antenna. Lowrance has been a leader in the electronics industry for more than 25 years now. You may already be familiar with our sportfishing sonar products, acclaimed as the finest in the world. And we're building that same quality and reliability into our satellite receivers.

Right now, you're missing out on worlds of entertainment. For more information on the Lowrance Earth Station/System 7 Receiver, clip the coupon below and mail.

*While most satellite programming is free, some channels are reserved for pay audiences and may require a small fee in the future.

Yes! I want to know more about the Lowrance Earth Station/System 7 Receiver. Send me more information today.

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Address _____

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SATELLITE TELEVISION SYSTEMS

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Videophile Satellite Television

The possibilities of component audio come to satellite video.™

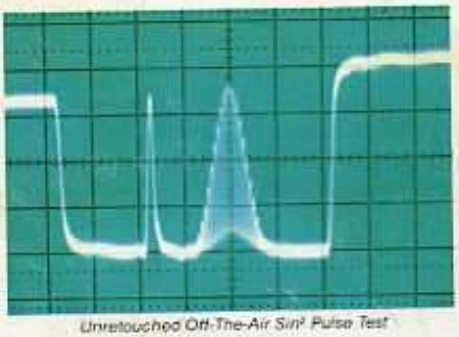
Component equipment has become popular in the audio field for a lot of reasons. One reason is that the component philosophy allows a purist to upgrade any piece of a system as technology advances without having to replace the entire system at once. This basic idea has ushered in an era of specialty firms dedicated to advancing the art of a single link in the chain. They succeed because all of their efforts are focused on one discipline, not thinly spread over an entire system. EARTH TERMINALS™ brings this philosophy to satellite television. We concentrate on the single most important, most difficult element—the microwave receiver. No other part of the system has such a dramatic effect on picture quality.

Quality You Can See

An EARTH TERMINALS receiver provides cleaner pictures with less granularity. Truer colors that don't smear. Less sparkling snow on weak programs. Complete absence of herringbones and waves. Superimposed lettering that doesn't tear at the edges. In fact, you haven't seen video this exciting unless you've been in a television studio. If you own a quality video projector, you'll be even more impressed.

Quality You Can Measure

Broadcast engineers are impressed with the accuracy of EARTH TERMINALS receivers too. Our VITS Sin² Pulse and video SNR test results are incomparable; actually the equal of most commercial grade receivers. We can also handle tough signals like Reuters data transmissions that give other receivers fits. It's no wonder then, that after exhaustive testing, some cable companies and television stations use EARTH TERMINALS receivers as their main source of satellite program material. They know value when they see it.



Unretouched Off-The-Air Sin² Pulse Test

It's Easy To Live With

All this technical sophistication is really quite easy to get along with. Precise automatic fine tuning tunes every channel the same way every time. You don't have to be an expert to get perfect pictures. EARTH TERMINALS receivers come with a remote control that selects channels individually, adjusts audio volume at your convenience, and automatically signals the rest of your system to supply the proper antenna polarization through an even/odd channel switch. And it fits in the palm of your hand.

Tips On Value

There are plenty of satellite receivers that cost less than ours, but nearly all of them need bigger antennas and more exotic Low Noise Amplifiers for a picture free of sparkling snow. If you're on a budget, you can save money in other parts of the system by paying more for our receiver and come out even. You get high fidelity video in the bargain. If you're simply after the best picture money can buy, we can make it very affordable. Either way, give us a call or write us for the details.

EARTH TERMINALS
Department 109
One Microwave Plaza
Cincinnati, Ohio 45242
513-489-6200

EARTH TERMINALS