

STATUS OF STATISTICS

An analysis, **as of the 10th of this month**, of the current pricing and inventory status **trends** in the TVRO industry. Users of this data are warned that **CJR** 'samples' key OEMs and distributors on the 10th of each month to determine trends and averages. Dealers will find this data useful in planning their own purchasing schedules for the coming 30 day period.

CURRENT PRICING/LNAs

For 100 degree LNAs, 50 dB gain, CWO terms, 3 lot purchase.

- 1) Lowest price reported: _____ **\$295.00**
- 2) Highest price recorded: _____ **\$349.00**
- 3) Average price recorded: _____ **\$329.00**

CURRENT SHIPMENT/LNAs

- 1) Greatest decline reported: _____ **- 30 %**
- 2) Greatest increase reported: _____ **+ 50 %**
- 3) Average 30 day change: _____ **+ 05 %**

CURRENT PRICING/ANTENNAS

- 1) Percentage reporting price declines _____ **0 %**
- 2) Percentage reporting price advances _____ **10 %**
- 3) Average 30 day change: _____ **+ 01 %**

CURRENT SHIPMENTS/ANTENNAS

- 1) Greatest decline reported: _____ **0 %**
- 2) Greatest advance reported: _____ **100 %**
- 3) Average 30 day change: _____ **+ 20 %**

CURRENT PRICING/RECEIVERS

- 1) Percentage reporting price declines: _____ **10 %**
- 2) Percentage reporting price advances: _____ **0 %**
- 3) Average 30 day change: _____ **- 01 %**

CURRENT SHIPMENTS/RECEIVERS

- 1) Greatest decline reported: _____ **- 02 %**
- 2) Greatest advance reported: _____ **+ 60 %**
- 3) Average 30 day change: _____ **+ 30 %**

EARLY WARNING (Next 30 days)

- 1) Equipment shortages predicted: _____ **100° LNAs**
- 2) Equipment surplus predicted: _____ **120° LNAs**
- 3) Biggest downward price move: _____ **120° LNAs**
- 4) Biggest upward price move: _____ **Antennas**

In surveying individual OEMs and distributors for the 'raw data' that goes into the above monthly summary, **CJR pledges** complete anonymity to its 'sources'. Dealers are asked **NOT** to contact **CJR** for information on 'lowest pricing' or 'greatest declines' referenced here; our pledge to sources is unbreakable! Many issues of **CJR** do, however, contain 'insert flier' sheets from OEMs and distributors announcing (as in advertising) current marketing specials.

OCTOBER 1983

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MID MONTH MEMO

MONEY. Increased industry emphasis on maximizing dealer profits is a sure sign of maturity for the TVRO field. While 'glamour products' will continue to make news for another year or two, the new era of industry growth demands increased attention at all levels to putting more money in the pocket of the installing dealer, after the sale.

\$750,000,000. That's our first look at 'money' this month. That giant chunk of cash was brought into the industry marketplace by **Satellite Financial Planning Corporation** ready to 'loan out' to dealers to finance consumer TVRO sales. Dealer access to the three-quarters-of-a-billion dollars starts November 8th, immediately after the SPACE Orlando show introduction of the fund.

\$999 for a \$400 TVRO receiver. That's the second part of our October money-look. How the innovative **Custom Television Network (CTN)** program works, the kind of dollars it generates, and how it could lead to bigger profits for installing dealers.

FEDERAL court judge in Miami has ruled that bars which intercept satellite NFL games are violating US copyright laws; **caution:** don't misrepresent capability of TVRO to bring in blacked out sporting events. You could be held liable!

Cooper
James
Report

CJR/ (The Cooper James Report is published and AIRmailed on the 15th of each month by **CJR Limited**, a Turks & Caicos Corporation with Corporate offices at Tower Plaza, Providenciales, Turks & Caicos Islands, BVI. All subscription requests, advertising requests should be directed to **CJR**, P.O. Box 100858, Ft. Lauderdale, FL 33310 (call 305/771-0505 between 9AM and 4PM weekdays). An additional editorial office is maintained in Tulsa, Oklahoma (P.O. Box D, Claremore, Ok. 74017; telephone 301/997-9545 where Larry James may be reached. Subscription price is \$35 per year, AIRmail, within USA, Canada and Mexico; in US funds only. Elsewhere \$45 per year in US funds only. Sample copy available for \$5 in US funds. Material contained herein is considered **confidential** in nature and is for the study and use of TVRO dealers, distributors and OEMs only. Photocopying or extracting contents is prohibited without permission; copyright © by **CJR Limited** 1983/1984.

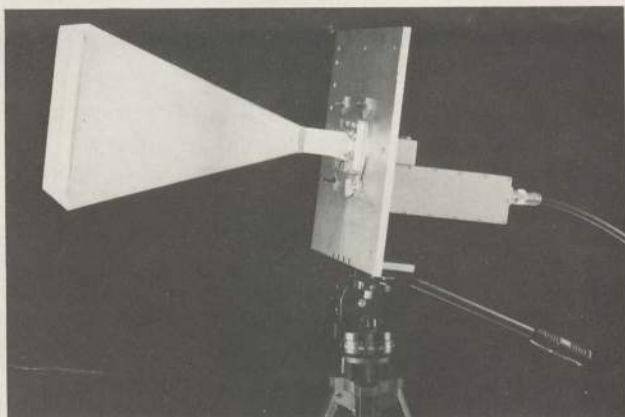
NEW PRODUCTS/ SERVICES APPOINTMENTS

ANTENNAS/ACCESSORIES

BOMAN INDUSTRIES (Satellite Products Division, 9300 Hall Rd., Downey, Ca. 90241; 800/421-2533 outside of Ca., 800/352-2553 within Ca.) announces an 'instant interface' polarization changing system for dealers selling Drake, Automation Techniques, Wilson products. Model PC-75 requires no internal set wiring changes, connects directly to terminals provided on TVRO receivers.

BOMAN also announces model EFH-90 Polarizer using magnetic field system pioneered by Robert Luly (no moving parts) and a model EFH-90-HG for .3 f/D 'deep dish' antennas.

MICROWAVE FILTER COMPANY (6743 Kinne St., E. Syracuse, NY 13057; 800/448-1666) announces antenna model 4377, a pyramidal horn calibrated (18 dBi) for the 3.7/4.2 GHz band to be used as a



MICROWAVE FILTER terrestrial interference finding horn.

terrestrial interference survey tool. Optional extra accessory is a mounting tripod. The horn attaches to a standard LNA and allows the user to pinpoint terrestrial interference sources accurately and quickly. Price is \$350 for horn, \$275 for mount.

PARADIGM MANUFACTURING, INC. (6911 Eastside Rd., Redding, Ca. 96001; 916/244-9300) announces results of wind and water loading tests conducted under professional test conditions. Nine and 12 foot antennas were tested at elevation angles from 0 to 90 degrees and from azimuth angles of 0 to 315 degrees. Wind speeds to 95 mph were created with water added at the rate of 337 gallons per minute; simulating hurricane conditions. The net effects of the wind and water (equivalent to wind loading of the antennas at 140 mph) revealed no loss of antenna performance, no warping of parabolic welded trusses, no loss of mesh surfaces or tie-down clips. Winds measured through the dish with 78.5 mph winds on the front surface were 64 mph, indicating considerable wind-porosity for the structures.



WIND/WATER 'hurricane test' for Paraclypse antennas.

SRS/SATELLITE RECEPTION SYSTEMS (145 N. Columbus Rd., Athens, Oh. 45701; 800/592-1956) has introduced a new light weight (875 pound) trailer for hauling dish antennas to sites. Equipped with a polar mount, dish raising and lowering hand cranking action, stabilizer bar support and a turnbuckle for fine latitude adjustments. Leveling jacks are included.

SRS also announces it is now selling the **Commander 8'** dish from Canada. The Commander antenna is spun aluminum pressed on a steel-tooled mold; no ripples. A heavy steel back plate strengthens the dish. Finish is anodized gold. Extender panels to increase the dish size will be available.

SUPERWINCH (Winch Drive, Putnam, Ct. 16260; 203/928-7787)

PRODUCT NEWS/ continues page 14

LATE NEWS

100 degree LNAs very tight in supply and prices up. Large surplus 120 units. Selected TVRO receivers in tight supply as industry experiences best fall season ever. Ahead; expect antenna prices to jump sharply after across board raw aluminum price increases of up to 35%.

ENGLAND's Steve Birkill will appear in **Orlando** in down-converter forum. Special sessions Thursday Nov. 3rd include antenna and feed measurements, novel 24 channel (S)MATV system design, SFPC presentation on \$750,000,000 TVRO 'loan fund.' SPACE board will meet Nov. 2 with candidate for new trade association manager job.

NOTICE TO READERS

CJR is provided **without charge** to Dealer Members of SPACE, the national trade association for the home TVRO industry in the United States. **This contribution** is made by **CJR Limited** in recognition that a strong national dealer base is essential to the continued maturity of the TVRO industry. **CJR** is published as the mid-month companion to **CSD** (Coop's Satellite Digest) and is available to non-members of SPACE for a nominal subscription fee; see fine print on page one, here.

Original Equipment Manufacturers (**OEMs**) are encouraged to submit new product releases as well as news of personnel appointments and changes to **CJR's** Assistant Editor **Carol Graba** (CJR, P.O. Box 100858, Ft. Lauderdale, Fl. 33310) for consideration for publication here. **OEMs**, distributors, others who wish to reach the mid-month TVRO dealer marketplace are encouraged to talk with **CJR's** Ms. Graba concerning advertising programs available in **CJR** (telephone **305/771-0505** weekdays between 9AM and 4PM eastern time).

DOUBLING MARK-UP ON TVRO RECEIVERS

\$400 = \$999

How do you take a TVRO receiver that leaves the OEM for \$400 and turn it into a \$999 retail product? And, have people waiting in line to buy them from you?

TX Engineering, Inc. (P.O. Box 7007, Renton, Wa. 98057; 206/228-5216) has it just about figured out and a track record behind them to prove that it works. TX Engineering is a small TVRO OEM in the Pacific Northwest. You probably have not heard of them. They have made few 'waves' to date in the national TVRO marketplace. But in the northwest, they are producing some of the most profitable TVRO sales in the industry and proving that if you approach the marketplace from a different perspective, it can pay off in big profits and very satisfied customers.

TX Engineering is the brainchild of a pair of men; **Roger Linde** who makes the business operate day to day and **David Lantz** who designs and oversees the installation of the unique TVRO hardware which the firm produces.

Linde explains.

"We started like almost everyone else in the field; intensely interested in the challenge of the field, but not certain how we could create our own niche in the marketplace." That's when he got his head together with David Lantz; the engineer. Lantz had spent some time working with **Keith Anderson of Anderson Scientific** in South Dakota. While working with Keith, Lantz developed some strong convictions about how a piece of equipment should function in the home viewing location.

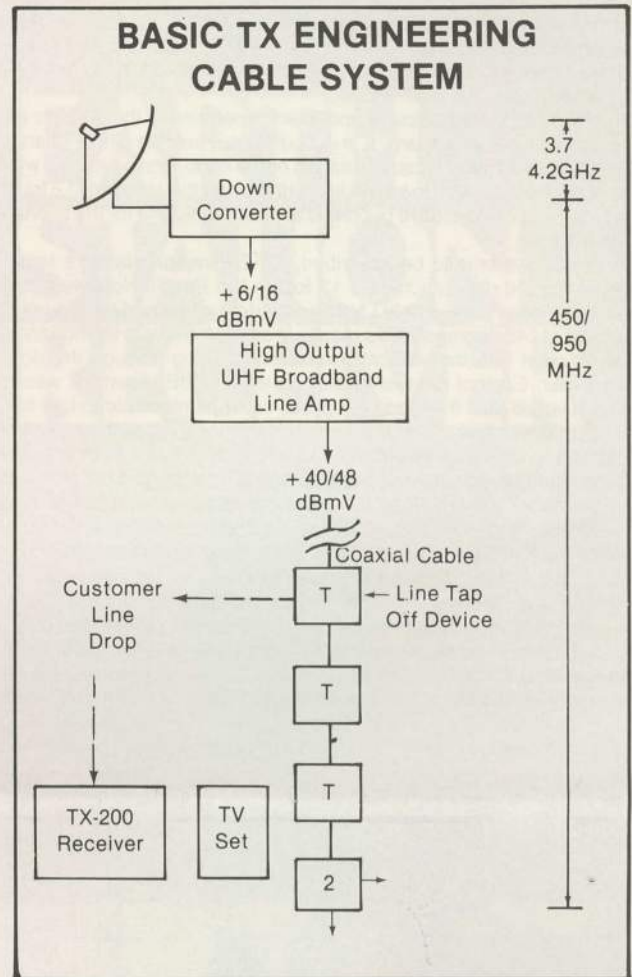
"I felt that Anderson was onto something quite substantial with their block down conversion package. They took the 3.7-4.2 GHz band and converted it to a frequency range of approximately 400 to 900 MHz. Then they ran a piece of cable (RG-59 or RG-6) into the home where the individual home viewer would tune his indoor receiver to a specific TVRO channel in the 400-900 MHz band. Since the system was using a frequency spread roughly equal to the UHF TV band (470-890 MHz), you could amplify the output of the down converter and split it just like you do standard VHF-only cable television systems. That told me that you could connect two or two dozen or two thousand separate indoor receivers to the same antenna, and each home would have independent access to say all 12 channels on a satellite's single polarization."

But Lantz saw some problems with the Anderson receiver in this mode of operation.

"Every receiver in the system shared the same down converter. Electrically, this should not present a problem provided the down converter is stable, sensitive, and capable of reliable operation. I felt, however, that the Anderson down converter could be improved upon."

Pioneer Anderson had been telling people that it was possible to get **more than 12 channels** through such a 'cabled TVRO system.' He had demonstrated, as early as the spring of 1981, 24 channels out of a single antenna. He did this by parking the LNA and feed at a 45 degree angle, sort of 'half way' in between the vertical and the horizontal transponders on say F3R.

Lantz again.



"This worked, after a fashion. But the tuning was very critical and the Anderson receiver really did not have a selective enough IF to allow you to cleanly tune in the succession of transponders from 1 to 24. It was more of a novelty than a commercial product."

"I owe Keith Anderson a great deal for the schooling he put me through. I was sold on the concept and I wanted to do it on my own. I didn't want to copy what Keith was doing, both because Keith had worked it out on his own and he deserved a fair chance to make it sell without someone copying him, and, because I had some pride in doing it my own way anyhow."

What has evolved is a unique package of equipment created by Lantz and designed to suit the marketing philosophy created by Roger Linde. We'll touch briefly on the different engineering approach taken by Lantz, and then concentrate on the marketing approach developed by Linde. The **December** issue of **CSD** will cover the engineering in considerable detail, for those who want to know why and how it differs from other block down conversion approaches now in the marketplace.

IMPROVED Technology

David Lantz starts off his system with a high quality, relatively state-of-the-art down converter that from outward appearances looks like many others on the market today. A more or less square box, a type N fitting for the input signal from the TVRO antenna/LNA, and an F fitting at the output to send the output signal in the **450-900 MHz region** on through some RG-59 or RG-6 cable to one or more waiting receivers.

In his TX-200 receiver, he has taken a cost effective but high quality approach to handling **24** separate channels, **all at once** without polarization switching. Because he found other tuneable receivers

trying to make pictures from a 400-900 MHz region IF somewhat 'broad' in tuning, Lantz decided to use a SAW filter device to create highly selective tuning. The filter is 21.5 MHz wide and as the user tunes the channel selector knob across the spectrum, he is moving a 21.5 MHz wide 'window' around.

"Normal tuned circuits and filters, operating in the 70 MHz (IF) region, are not very sharp. It is difficult to get precise single-channel reception without very careful tuning of the knob, and when you want to send 24 channels down the line rather than the standard 12 found on a single polarization, it becomes almost impossible for the average user to tune."

In the systems to be described, TX Engineering takes a larger-than-required dish (such as a 13 foot in the Pacific Northwest) and carefully adjusts the single LNA and feed for a half and half situation; parked at "45 degrees." This results in signal from both the horizontal polarization and the vertical polarization getting through the down converter. Each of the two sets of signals is 3 dB 'down,' or weaker than it would be if the feed/LNA probe was optimized (adjusted) for a single polarization. That's the reason for the bigger-than-required dish; if you lose 3 dB because of adjusting the feed for both polarizations together, you make it back up again by enlarging the dish 3 dB larger than is required for noise free pictures on a single polarization.

Others have tried this. None have apparently tried to do this on a large scale, using a receiver which was designed from the ground up for just this application. Lantz elaborates.

"The standard transponder is 36 MHz wide. But we have found that you can reduce the bandwidth of the receiver to recover only a portion of that bandwidth, and not sacrifice the essential picture elements. When you adjust your LNA probe/feed for 45 degrees, you are now sending signals that are 20 MHz apart (vertical, horizontal, vertic-



TX's Roger Linde (left) and David Lantz. Linde holds TX-200 receiver, Lantz holds antenna for unique application of system to be detailed in CSD for December.



al, etc.) through the system. That's twice as many signals as you have with a single polarization and they are now half as far apart signal to signal. The 21.5 MHz SAW filter IF separates the half-width signals just fine for the average viewer."

Lantz has also designed a special detector circuit for the system to help compensate for the less-than-full-width signal information present. And whereas many of the narrow IF receivers have some difficulty retaining the audio quality, Lantz has created a custom designed audio detector circuit to keep the audio crisp and clean. It all works very well.

TX's Linde.

"We knew as the package came together that our marketing emphasis was going to be different than anyone else's. I always felt we were creating a brand new market, one not addressed by the existing equipment suppliers. I don't look upon Anderson, or Janeil or others in the marketplace as being in our marketplace. I honestly don't think anyone else has focused on the market we are addressing yet."

The TX market is variously described as 'private cable,' 'custom cable' or even 'SMATV' although Linde adds, "I do not like the SMATV label at all; it suggests that the systems themselves are being operated for profit, which is not our approach at all."

Not for profit? Surely there has to be profit in there someplace! Linde.

"Our best approach, after trying several, works in this manner. We approach the owner of a condominium complex, say the condo owner's association; or, a trailer park. We are very selective with our trailer parks, concentrating on those where the occupants are permanent residents. There are many in the Northwest, primarily retirement villages. If we go into a trailer park and see the wheels still on the trailers, we turn around and leave immediately. We want to see double wide trailers up on blocks or concrete foundations, trees and plants growing thickly, and other signs that the people are there to stay.

"We work out an agreement; we will put in a single satellite antenna and install a cable distribution system for the park or condo complex. We do all of this on our own money, as a speculative venture. Of course someplace in here we have conducted a door to door marketing survey to determine the interest level of the residents in having a '24 channel satellite service.' The antenna is parked on F3R.

"When the system is complete, we are then ready to begin marketing. Most of the parks or condos will have an existing VHF type MATV system operational. And most of these systems will be poorly maintained if maintained at all. As a sign of goodwill, we offer at our own expense to completely update the existing VHF system. That may involve new off-air antennas, some new amplifiers, single channel strip amps, even replacing sections of cable. We do this because it gives us an entry into each trailer or condo unit. We always make the VHF systems work better than we found them, and since we like to 'check' the quality of the reception in each unit after upgrading the VHF system, that puts us inside the resident's living room talking

\$400 = \$999/ continues page 6

EARTH STATION RECEIVER



ESR224 RECEIVER

FULL PERFORMANCE SATELLITE TV RECEPTION

- All 24 Satellite Channels • Attractive Styling
- Detent Channel Tuning • Normal/Inverted Video Switching
- Variable Audio Tuning for All Subcarriers
- Channel "Scan" Function • FCC Approved Modulator Available
- Polarotor™ Interface Standard • Optional RT224 Remote Control Available
- Matching Stereo Adaptor Available

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PIONEER MEMBER OF
SPACE

with them on a friendly basis. That's when we explain our program to them."

And the program?

"We offer to sell them a receiver; a satellite receiver. We explain that with the satellite receiver they will add 24 new channels of TV to their TV set. We have literature that explains what these 24 channels amount to, what programming is involved. We further explain that each owner of a receiver is also a part owner of the master system; a true viewing cooperative. Since we are doing this at a time when we have the 450-950 MHz system already installed and operational, the scenario gets something like this."

"If you are interested, I can install one of our receivers here in your living room right now for a one week trial.' Almost everyone says yes and we simply bring in a receiver, make the necessary connections to the cable system already coming into the home, and show them how to operate the receiver. One week later we come back and ask them if they wish to keep the satellite service. A very high percentage says 'yes'."

TX Engineering tries to make it as easy as possible on the buyer. "We have worked out a financing plan, using a regional finance company. The receivers are sold for \$999 each. The only additional charge may amount to \$50 or \$75 for the drop into the house if we have an unusually long drop situation requiring some additional UHF band amplification. There is a high consumer awareness, at least in the Pacific Northwest, that if you have cable service available, you pay around \$35 a month for the 'basic service' plus perhaps two or three premium services. So we have worked out our financing arrangements so that they may buy the installation for cash (\$999 plus a drop charge if required), or, they can pay approximately \$33 a month for 42 months. The difference in the two is the financing charge."

So one of the keys to the success of the business is to show the people what they will have, in their homes, by simply giving them a 'trial period.' Another key to the program is to emphasize that they actually own the system, each viewer has a pro-rated ownership right to the full system. Yet another important ingredient is to keep the charges in line with 'cable TV' since people already have a 'fair-price-picture' for cable in their minds.

Size. How many outlets does it take to make this project worthwhile?

Linde. "Our systems to date have been as small as 98 outlets total or as many as 250. There is a lower limit to this shared concept since everyone who becomes a part owner of the system is carrying a portion of the cost of the satellite antenna/LNA portion of the package, plus the cost of the distribution cable plant. I have a rule of thumb that tells me that if 30% of the potential outlets become a part of the system, we are in the black. But no two are exactly alike since it may take two miles of cable plant to reach 30 in one instance and only a half mile of cable plant to reach 30 in another instance. The headend, consisting of the dish and the LNA and the first high powered line amplifier, is usually a small part of the total distribution package. The plant itself, consisting of the cable, the line amplifiers, the signal splitters, the power supplies, and the tap off devices adds up far faster. You can be profitable with 30 homes out of 100 potential, but the real money comes when you get beyond that 30% rule of thumb."

TX separates their selling function from the design, engineering and installation phase. They use sales people who have been trained to make the individual receiver installations, and the sales people work on a commission basis.

Linde. "Our salesmen can make really good money, but not before we reach that 30% plateau. We have to cover the cost of the system itself first and everyone knows that. When you reach the plateau, then everyone involved really gets turned on because there are some substantial dollars there for a few weeks work."


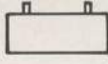

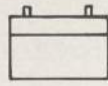


TX has found that there are several dangers in their approach. Lantz first.

"This is NOT a business for people who have no background in cable distribution systems. Cable television is a well documented technology. But cable distribution plants function at much lower frequencies; typically 50 to perhaps 440 MHz. Where cable stops, at the high end 440 MHz, is where we begin. There are very few engineers around who have ever designed and installed high quality 450-950

MHz distribution systems. It is an entirely new ballgame; everything from the fittings to the component parts MUST be swept by sweep gear before installation. You can 'lose' a channel or block of channels faster than you can crimp on an 'F' fitting simply because the way you have grown accustomed to 'getting by' at lower frequencies will not hold up in this UHF portion of the spectrum."

TX has found that their greatest success with 'franchising out' their package and equipment has come from firms who have a solid history in cable TV distribution systems. One firm, in Oregon, came directly from cable contract work into the TX system. They have made it work because they had the experience and test equipment to insure that the systems are installed properly. Linde again.

"This is not a system which is forgiving; if it is done properly, it works beautifully. But you are dealing with several new commodities here; FM transmission in a new spectrum are the two most important new commodities. A reasonably high quality spectrum analyzer (such as a Texscan VSM-2) is a must. You can't use a field strength meter to

ITEM	DESCRIPTION	COST	PRO-RATED PER HOME/50 HOMES	SALES COMMISSION	PROFIT/INSTALLER
	DISH, LNA, DOWN CONVERTER	\$2000	\$40	—00—	—00—
	HEAD END HIGH OUTPUT AMPLIFIER	\$ 400	\$ 8	—00—	—00—
	CABLE PLANT	\$4000	\$80	—00—	—00—
	LINE AMPS. SPLITTERS	\$2000	\$40	—00—	—00—
					
	INDIVIDUAL HOME RECEIVERS	\$20,000 (50 x \$400)	\$ 400	\$90	\$509
TOTAL PLANT COST 50 SUBSCRIBER HOMES			\$658 PER HOME		\$341 PER HOME

PRO-FORMA PROFITABILITY FOR SYSTEM PASSING 100 POTENTIAL SUBSCRIBERS WITH 50% PENETRATION

check levels and system 'flatness' in this application."

TX insists that those firms who would become part of this program commit to both the test equipment and the staffing required to make it work. A new 'master distributor' must purchase his own test equipment, hire or allow TX to train a chief engineer, and then send their personnel to TX for a week or more of on-the-job training. There are no exceptions.

"We could ship twice or three times as many of our TX-200 receivers every week if we played the 'pipeline fill up' game played by others. That would produce a great quarter, or maybe two quarters in a row. Then we'd spend the next two quarters of the year on the telephone trying to sort out problems created by people who simply did not understand the technical parameters of the system."

The Legalities

One of the primary reasons that Linde does not like the 'SMATV' label for his systems is that he considers his firm to be professional in every area. He feels that SMATV is often a thin disguise for pirating of

satellite signals. But, do TX system viewers pay for their use of HBO et al?

"No, they do not," he responds.

Is that not just as illegal as a motel that installs its own dish and pipes the services around to rooms; without contracting for the services?

"**Nobody has been able to show me where it is illegal.** Remember, **each viewer owns** his own receiver and a portion of the system itself. He is no different than the individual home TVRO viewer who, to date, has not been challenged by the courts. TX earns money for the equipment involved, because we manufacture it and sell it. But we collect no money for the viewing and we have no gain for our work after the customer buys the equipment from us. Our system differs from an individual home system only because all of the viewers are sharing a single antenna and set of amplifiers. We don't demodulate and process the signals; the headend is simply a broad banded amplifier. We don't control the signals, nor do we in any way change the contents of what comes off the satellite. We are doing with satellite signals what the early cable TV pioneers did with off-air VHF signals; amplifying them and sending them down the line. **But there is one significant difference;** the cable pioneers owned all of their plants and we don't."

TX is not about to bait the 'cable boys' nonetheless. It is not looking for a 'test case' to prove its thesis. Linde.

"**We try to be price competitive and service competitive with cable.** But we never take our system into an area where cable is now or is likely to be available, soon. There are thousands of pockets of people all over the USA; pockets created by clustered rural housing, condo developments alongside a lake or river, trailer parks, and what have you. These people-pockets are as often as not miles and miles from the nearest cable lines. They are not big enough to qualify as stand alone cable system opportunities if you have to spend the kind of money it takes to individually process each signal that you would deliver to the residences. I can see where we will be very busy for ten years or more just servicing those pockets of people where cable is not and never will be. They don't like being second-class TV citizens and we offer them an opportunity to do something about their second-class status."

Why It Is Cost Effective

SMATV or MATV systems function by individually processing each of the channels of service to be carried on the small cable plants. If the signals are local VHF or UHF channels, each channel requires a signal processing amplifier. If the signals are satellite delivered, you have individual satellite receivers and individual modulators for each channel. Add this to the dish and LNA(s) and other hardware, and you have as much as 75% of the cost of the system tied up in the 'headend.'

The TX approach shifts that burden; leaving only the dish and an LNA and a UHF line amplifier at the 'headend.' The balance of the system cost shifts to the individual homes where the service will be enjoyed; in the form of the cost to the user of the individual satellite receivers.

TX versus The Others

At the present time there are at least three other similar product lines in the marketplace. As noted, the concept for cabled distribution of satellite TV signals probably originated with Keith Anderson of Anderson Scientific. Add to that a recent market entry from Janeil and a slightly older market entry from LOCOM. The latter is a licensee of Anderson.

Lantz on 'the competition.'

"**We don't feel they are in the same marketplace;** we send people to one or more of them on a regular basis when the system is too small to warrant our higher priced equipment. I feel their approach is fine for perhaps a half dozen outlets or so, provided they limit themselves to a single polarization (12 channels): One of the keys to our success has been our full line of equipment for the service."

Those who began playing around with cable distribution of the 450-950 MHz range signals promptly discovered that in addition to new 'engineering requirements,' there was an almost total lack of adequate support equipment in the field.

There is an almost 3 dB cable 'tilt' between 450 and 950 MHz. That means that if you start out with exactly **equal** signal levels at 450 and 950 MHz (the low and high end of the band; transponders 1 and 24 respectively), at the down converter, by the time you go through 100 feet of cable, the high end signals will be approximately 3 dB weaker (half as strong) as the low end signals. This is not a situation which you can allow to continue or before you get to the customer's service drop, you will have lost all of the higher channels in the noise. TX did what others to date have not done; it designed a line of amplifiers covering the 450-950 MHz region, with 'tilt' built-in. That gives the system designer the ability to space his amplifiers so that both the low and high end signals end up at the customer's satellite receiver, through the signal drop, at the same approximate levels.

"You cannot simply produce a down converter and a receiver and survive in this field," notes Lantz. "You have to address every portion of the system, specify by exact part number those parts that you know from test will work in this application and then stick to those parts when you put in a system."

Cable, fittings, line splitters . . . every part that is between the master antenna and the home receiver unit must be 'quantified' for performance. Lantz. "We have boxes and boxes of line taps, splitters and what have you which the manufacturer **told us** were good to 950 MHz or more. They didn't make it in our testing program and we don't want to get someone out there in the field installing a system and then finding out after the fact that he has used a series of splitters which don't work above say 800 MHz."

TX-200 SYSTEM SHORT-FORM FACTS

Mfg: TX Engineering, Inc., P.O. Box 7007, Renton, Wa. 98057 (206/228-0980).

Products: TX-200 (home) receiver, DC-20 down converter, TX LA 25 U/V line amplifier, TX PS 24 Power Supply/Mixer, PD 430 U/V Power Divider, and, GE 420 Graphic Equalizer.

Application: 'Custom Television Network' (CTN) cable distribution satellite fed plants allowing individual homes to make individual program choices from any of 24 separate transponders from F3R (typical application).

Sales Technique: Groups own their own receivers and 'headend' and 'distribution plant,' sharing between all users everything but the individually owned receivers proper.

Contact: Roger Linde, David Lantz.

Part of the problem is that until now the only real 'market' for distribution equipment above the cable spectrum cut-off near 440 MHz has been the occasional UHF TV band distribution system. Most of these go into motels and there has never been that much of a market for this equipment. Plus, most of this equipment is rated to perhaps 825 or 850 MHz; shy by 100 MHz or so from the magic upper limit of the required 950 MHz.

Lantz. "You cannot simply 'ignore' this problem; it causes you to roll off or lose those higher channels and obviously that is not a satisfactory way to handle your customers. We have tried to take a professional approach, dealing not only with the satellite part but every other part as well that might affect the ultimate picture the viewer sees on his television set."

This has required many sessions with passive equipment suppliers who sell to the distribution markets. And it is a classic chicken and egg confrontation. The passive people, who make taps and splitters and so on, are more than anxious to upgrade their equipment to 950 MHz, or even 1 GHz. But they want to be assured that there is a market, in volume, for their equipment when they make their engineering changes. TX and others in this field, meanwhile, are saying that until they have the bits and pieces that are good to 950 MHz, there cannot be a market in volume. Which comes first? The equipment, or the market???

Looking Ahead

Both Lantz and Linde feel that the marketplace they are working in is unique and different; that it is only 'slightly related' to what others are

doing in the (home) TVRO field at the present time. They hope the concept will catch on because if it does there will be a much better acceptance of the approach.

There is some surprise that firms who have a leg-up on distribution system technology, folks like Channel Master and Winegard for example, have not entered this market with their own receiving systems. Linde.

"Since those firms already have the engineering ability to handle the 450-950 MHz segments with a line of products designed to function here properly, and since they also have TVRO receiver manufacturing capabilities, we would not be surprised to see them combine those disciplines into packages similar to what we are offering."

Lantz is already hard at work combining the normal VHF distribution systems (50-220 MHz) with the satellite distribution systems (450-950 MHz). He feels that the future systems will make use of the entire spectrum, from 50 to at least 950 MHz, including normal off-air VHF service in the 50-220 MHz portion. And that portion between 220 and 450, now not assigned to any particular service?

"Well, **who says you have to limit your satellite service to say 24 channels** from a single satellite? There is sufficient room in the

'cable' for another 10 or 11 satellite delivered channels between 220 and 450. First you install a second dish, point it at another satellite that offers consecutive channels such as we find on F3R, and then you block down convert them to 220-450. And then you expand the tuning range of the in-home receiver so that the viewer has tuning in the wideband FM mode from 220 through 950. Now you have a 35 or so channel system . . ."

In Orlando

Dealers who will be traveling to Orlando and the November 3-5 SPACE gathering will have the opportunity on Thursday afternoon, November 3rd, to attend a two-hour training seminar session to be conducted by TX Engineering's Dave Lantz. The TX sessions will start off with the basics of installing a dish for high quality reception and continue on through the design and installation of a distribution system using the technology explained here. This will be a 'learning exercise,' not a sales and hype exercise and dealers should come prepared with notebooks and tape recorders to absorb as much as possible in the two hour period.

FINANCING CONSUMER TVRO PURCHASES

\$750,000,000 Available

As initially reported in the October issue of *CSD*, a group backed by a prominent bank holding company headquartered in Wilmington, Delaware has made a sizeable financial commitment to the home TVRO industry. **Satellite Financial Planning Corporation (SFPC)**, headed by insurance industry entrepreneur **Bill Young**, kicks off a nationwide (plus Canada) 'Consumer TVRO Financing Package' at the forthcoming SPACE show in Orlando, Florida; November 3-5. Here, basically, is how it will work and what it can do for you as a TVRO dealer.

SFPC has attempted to structure the financial program so that the dealer has as much consumer-flexibility as possible. The concept is to make it possible for a dealer to use the financing package so that sales lost because the consumer cannot come up with the total required installed-retail price will now be 'saved.' At the same time, the dealer will be able to use the financing package availability to 'sell up' the buyer to perhaps a more complex and higher ticket package than the buyer might be able to afford for a cash purchase.

The dealer joins no organization, pays no fees, signs no papers to be a part of the program. All the dealer needs is an understanding of how the program works, the proper 'application' paperwork, and the advance approval of SFPC to be a part of the program.

The business is headquartered in Baltimore, Maryland where a staff of more than a dozen financial processing people will be instantly available via an 800 number program. The business will be open for extended hours to accommodate the three major US time zones. The dealer kits will explain to the dealer the various loan application procedures, the type of data required from the loan applicant, and the several options available to the consumer for term financing. A 'school' will be conducted at the SPACE Orlando show to teach

interested dealers in the fine points of handling the program.

There are several 'plus factors' associated with the program. They include:

- 1) There is a total commitment by the bank consortium backing the financing program of \$750,000,000. That tells us that there are the dollars available to finance more than **20,000** brand new **\$2,000** price range TVRO terminals **per month** for more than a year. Behind that 'initial' fund is more money.
- 2) The consumer will not be paying an outlandish rate of interest. The interest will adjust on new loans monthly, based upon the then standing prime interest rate. It will be approximately 6 points (percent) over the so-called prime interest rate. That works out to a fraction of the interest many consumer finance firms presently charge or 75% of what a user of a VISA or other major credit card is charged. Nobody likes to pay interest, but in this case the 'rate of interest' should not be a stumbling block.
- 3) The consumer can purchase an installed TVRO terminal on a variety of terms; he can put some of his own money down as a down payment, and bring his monthly payments 'down.' Or, he can buy a terminal with **no money down** and finance the system for as long as 6 years. The dealer is equipped with a set of financing tables with which both he and the consumer will have an accurate idea of the monthly payments involved.
- 4) The procedures for getting a consumer approved for a loan will be similar to the following example:
 - A) The consumer selects the terminal he or she wishes and elects a payment schedule based upon down payment or no down payment, and the length of the payback schedule. The consumer signs an order form for the system, conditioned upon the dealer being able to secure financing for the terminal.
 - B) The dealer uses the SFPC 800 number line and telephones-in the customer's name, address and social security number. This information is immediately fed into the national credit checking computer system at SFPC.
 - C) In as little as three working hours, and in no case in more than a working day, the approval (or non-approval) information is back in the hands of the dealer. The dealer has a 'loan authorization number' which he places on the form already signed by the consumer.

Then the dealer goes ahead and advises the consumer that the loan application has been approved, and schedules the installation. **At the same time** that SFPC advises the TVRO dealer that the system loan has been approved, the dealer will hear a second 'number' on the telephone. Let's assume the initial system was scheduled out at \$2995 installed. When the SFPC office approves the loan, they will also tell the dealer a 'maximum loan number,' or amount, which the consumer qualifies for. Perhaps the credit check revealed that the consumer is 'credit-worthy' for a \$6,000 loan. The dealer already has a

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\$2995 sale posted with the consumer's signature. But now he knows that the consumer rates well with the credit people, and that he could sell up to \$6,000 in equipment and services to the consumer **with no additional approval required.** That allows the dealer to not only tell the consumer the \$2995 loan is approved, but to **also** tell the consumer that if he or she wishes, they could 'up-grade' their purchase to a \$3995 system, or add in a big screen television, or anything else the dealer sells, **up to \$6,000.** This, in effect, gives the dealer one additional opportunity to 'sell up' or expand the sale before the actual installation.

- 5) The system is installed and when it is completed, the customer signs-off on a form indicating that the system has been installed and made operable to their satisfaction. This form, less a copy that stays with the dealer, is then sent to SFPC. Those in a hurry can use overnight express mail or air priority envelopes.
- 6) Typically within three working days the funds for the system sale are processed and winging their way back to the dealer from SFPC.

SFPC will maintain both 800 credit approval lines and 800 'dealer assistance' lines. The concept is to provide daily, close liaison with those dealers who have sales underway so that the dealer is kept advised of the status of sales and payment processing every step of the way.

Now, what are the negatives with the program?

The first one that is apt to cause you some concern is that the loans will only be available to homeowners; sorry, no apartment dwellers or trailer home owners (*).

The second point that you may have some trouble understanding is that there is a mandatory insurance/warranty policy that goes with the sale. In other words, built into the cost of the financed package (i.e. monthly payments) is a warranty/guarantee program. This 'insures' that the system will function for at least three years, as intended. That's good for your customer since he is getting guaranteed performance for the first three years, and an option to renew his coverage after that point. That is also good for the people providing the loan money since they are now assured that the customer will not be protesting his or her monthly payments two or twelve or twenty months into the 'contract' because the system has stopped working. Yes, this brings up the per month price of the package. But in this case it makes good sense because it gets you, the installing dealer, off the hook for out-of-pocket repairs and warranty work after the sale.

Those appear, to **CJR**, to be the only formidable hurdles you will have to adapt to, as a seller of TVRO packages which are financed by SFPC. There are some fine print nice features worthy of note as well. For example:

- 1) Using something called 'Flex Payments,' there is no penalty of early payback of the loan. This gives the consumer the freedom to pay off the remaining balance on the system at any time without a 'prepayment penalty.'
- 2) **The loan is transferable.** If the consumer sells his home, he can also transfer the TVRO to the new homeowner provided the new owner is willing to take over the unpaid balance on the loan. The equity the homeowner has in the system (i.e. amount paid in to date) becomes an added equity in the 'home' as a result.

IN Orlando

The official 'roll out' of the national plan will be in Orlando, as noted, November 3rd. Dealers attending the Orlando show will have several opportunities to learn how they can adapt their own selling programs to the plan. Some of the OEMs have scheduled 'private SFPC seminars' at Orlando and they are inviting their dealers to attend the seminars where SFPC personnel will outline the program and answer

* — Trailer park buyers may not be totally 'off-limits.' At least one OEM who specializes in selling TVRO systems to trailer park owners maintains that occupants of 'retirement trailer parks' have a far higher 'stability factor' than the average American family. A special study at SFPC now underway will attempt to verify that claim and if it is found true, then certain types of trailer park installations may become possible with SFPC funding.

questions. Others have arranged for special videotaped presentations from SFPC and these OEMs will be holding mini-seminars all across the United States in the coming winter months to expose dealers to the huge line of consumer credit available.

Additionally, the SFPC booth in Orlando will be staffed with personnel to answer dealer questions and get dealers started. The first official day of business will be November 8th, the Tuesday following Orlando.

WHAT Could Happen

The logistics of handling \$750,000,000 in loans to ultimately a quarter million consumers or more spread coast to coast in all 48 of the continental states, plus Canada, has got to be mind boggling. SFPC's Bill Young points out that this program is a "**very positive indication that the (home) TVRO industry has finally reached a stage of maturity where the major financial community in the United States believes in the industry, what it sells, and what it has to offer to the American consumer.**" Young goes on to point out that given the amount of money initially pledged to the program, dealers and dealer groups will be in a position to create their own 'aggressive selling programs.'

Prior to Orlando and the roll out of the program, SFPC is putting the finishing touches on explaining the program at the OEM and major distributor level. It is important to realize that the funds **go directly from 'the bank' to the dealers;** that the program does **not involve** individual OEMs or distributors. However, many of the OEMs and distributors are quick to realize that if their dealers are aware of the program and know how to use the program to their advantage, that will mean more equipment being moved at both the OEM and distributor levels. One OEM told **CJR** "**I expect to double my volume in 1984 just on the strength of the SFPC program. I want ALL of my dealers to know all there is to know about the program, and to use the instant cash program as a positive selling tool. This is perhaps the most significant boost to the (home) TVRO industry since the industry started.**"

SFPC's Young pioneered the program by carefully analyzing the problems facing TVRO dealers. The program has taken nearly six months to put together and it represents thousands of man hours of investigation and exhaustive study by some of the best financial and warranty planners in the US. Getting backing for the program from a major US banking conglomerate was of course essential.

It is likely, now that the industry has a national financing program for (home) TVROs, that within six months there will be a number of 'me-too' programs springing up backed by other major banks. Banks are typically very conservative and fear being pioneers in a new financial area. However, history shows us that after one major bank has taken the first step, it is not very long before others will follow.

The strength of the program should become quickly evident; it is coming out just weeks ahead of the traditional 'slow down' that the industry always experiences as we enter the colder, winter months. How well the program is 'selling' through the dealers will be evident as early as January, and this places the OEMs in a difficult spot.

Last year gave us an exceptional winter period; major suppliers such as **KLM** and **RL Drake** experienced January/February sales up to 110% ahead of what they had projected. Traditionally, the OEMs anticipate a slow down in the winter months and cut back on their own planning and scheduling of raw parts for equipment. Drake, for example, had cut back on its scheduled raw parts delivery for last February and when the sales did not drop off as predicted, found themselves out of parts to build receivers. This caused some momentary bubbles in the equipment distribution patterns in the industry when several major suppliers were unable to keep up with the equipment demand. Promptly, dealers began ordering from back-up sources; OEMs they normally did not buy from, or only bought from 'lightly.' This started a 'ripple effect' in the entire industry that did not sort out until late in April.

After the sales-surge pattern of last January/February/March, the OEMs are more wary of the winter period. Add to that, now, the potential positive effects of the SFPC \$750,000,000 'loan fund,' and you have OEMs caught between past experience and 'best guesses' as to the number of units they should plan to build and sell through the



FIRST NATIONAL's President Joe Gammon (left) and SFPC's Bill Young. "The \$750,000,000 is 'seed money'."

traditional 'slow period.' In the best case, it suggests there **could be some real equipment shortages** in the first quarter of 1984, and dealers are advised to pay extra attention to the state of distributor and OEM inventories through that period.

AND There Is More

Finally, there is the 'floor plan' portion of the SFPC program; a situation where, under the right circumstances, a dealer can look to SFPC for some very substantial long term (48 month) financial backing to get his initial stocking inventory financed. The details of this part of the program will **not** be released until SFPC makes its presentation in Orlando. CJR has learned that as much as \$50,000 in 'floor planning' funds can be made available to qualified dealers, however.

Floor planning is a technique often used in other 'mature' retailing industries to cause the products being sold to move more quickly. It works in this way.

The dealer finds he could sell more equipment if he could 'deliver from stock.' The three days to two weeks that he may have to wait for the equipment to show up from a distributor creates problems for his selling and installation organization. If he could sell a system at 5PM on Monday, have approval from SFPC for the system's financing at 12 noon on Tuesday and start installation of the system at 2PM on Tuesday, **because he has the equipment on hand**, his cash flow improves dramatically. Everything happens quicker, and the cash moves quicker. All of this is possible only when the dealer has the goods in inventory.

Floor planning makes that possible. Using funds from SFPC, the qualified dealer will find he can keep goods in inventory. He does this using SFPC money and he of course pays interest for the money he is using for as long as he is using it.

** — SFPC/ Satellite Financial Planning Corporation, Baltimore, Maryland; 1-301- 964-1990 until November 1, 1983; thereafter, 1-800- 932-DISH.

SERVICE: MORE POLAROTOR INSTALL TIPS

CJR SEPTEMBER began series on feed polarization systems and how they work. This month we conclude this initial part of series with additional polarotor data. Upcoming in December **CSD**, antenna range measurements for TVRO feed systems.

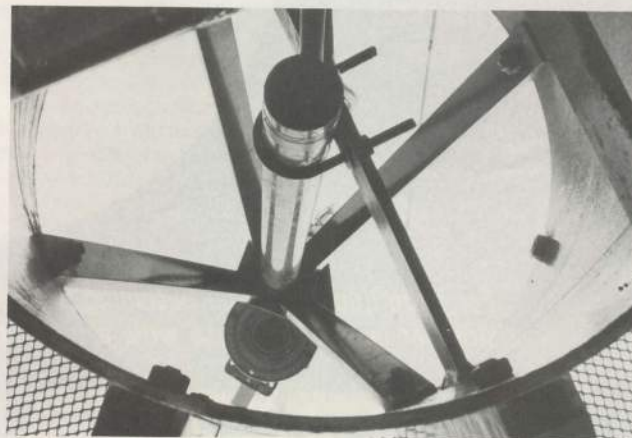
Obviously you would feel much better about the installation if you could show the consumer that as he/she operates the control, it goes to a **peak position and then past** that position, on both vertical and horizontal. The consumer will eventually figure out, if you don't, that if you cannot actually go **'through'** the proper peak signal, you cannot be sure that you ever arrived **at** the peak signal.

The answer does not lie with the Polarotor mounting scheme at all. A 90 degree twist is only going to shift the problem for you to the opposite polarity. It will not solve the problem.

So what is the answer? Cursing Chaparral for not giving you more rotation room is not the answer either.

Take a close look at your feed support. Something on it, **some part** that holds the flat plate or ring to which you bolted the Polarotor, **turns on its own axis.** There may be a set of U/C clamps (see Paraclype example) that holds the tube, or some other system that allows the feed support to rotate. Your solution is to rotate the feed, just a tad.

Start off with the Polarotor up against the stop. Where you came up on, but could not go **'through'** the polarization peaking exercise (vertical in our example), rotate the entire support (support, Polarotor, feed, LNA/LNC, etc.) about twenty degrees. If you selected the **'right'** direction to rotate, you should **now** be in a position where you have vertical (plus a 'go-through' amount of slop) on one end of the control and horizontal (plus a 'go through' amount of slop) on the other end of the control.



LOOSEN U/C clamps and twist slightly (usually 20 degrees will get you off of a 'stop/dead-end' position) **so your installation has breathing room at both ends of the control.**

POLAROTOR/ continues page 13

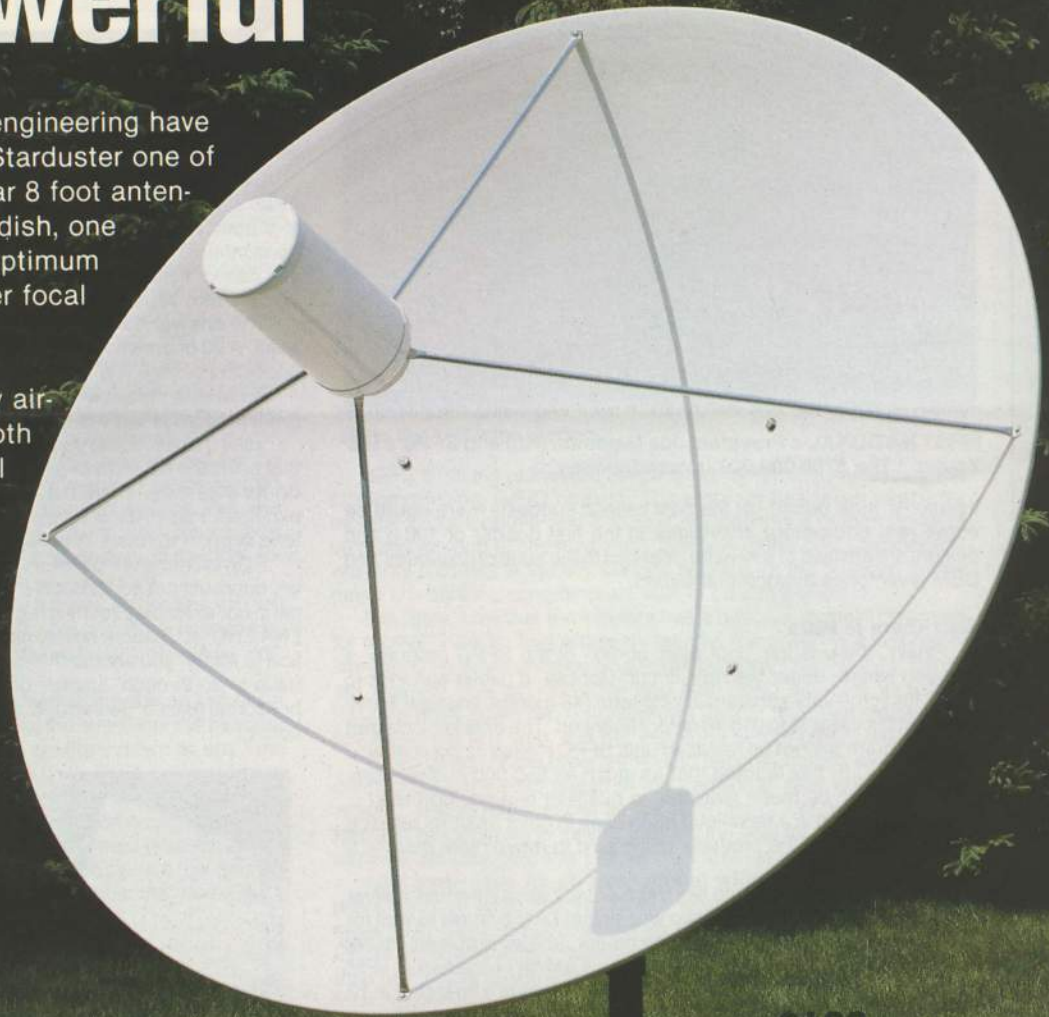
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QUANTITY PRICING AVAILABLE



POLAROTOR/ continued from page 11

The slop?

Let's take it a step further. As you turn the full dish through/over/ across the geo-stationary Clarke orbit belt, the apparent polarization of the signals arriving at your location will change. Those furthest to the west (lowest in your sky) will have their vertical and horizontal 'skewed'; twisted away from true vertical or horizontal. The satellites most nearly due south of you will most closely approximate true 'vertical' and true 'horizontal.' That's why you cannot set up your Polarotor 2 and expect it to properly adjust vertical to vertical and horizontal to horizontal as you move across the 'belt.'

Huhh. What is this all about?

A satellite has to have some reference for vertical and horizontal. There are no 'straight lines' out there in space for the satellites to look at. They don't know vertical from horizontal, up from down, **unless they have a reference.** The reference is the north pole of earth. Let's say the satellite is located at 95.5 degrees west (Telestar I). When it 'looks north,' it looks directly 'up' the 95.5 degree longitude line. If it sent a signal out, it would point at the north pole as a reference; in other words, the vertical signal would be straight up and down vertical, and the horizontal signal would be straight across horizontal **as long as you were on that 95.5 degree west line yourself.**

Now, if you are west of the 95.5 degree line, the signal would be canted; twisted or skewed. The earth is round and you are 'off to the side' of the straight-ahead look of the satellite. So the vertical and horizontal will twist slightly (or alot, if you are far west or far east). And when you point at Telestar I, you have to twist your feed polarization so that its 'skewed' vertical aligns with your up-front probe.

If that is confusing, let's simply deal with the end result. If your feed was adjusted on a bird exactly south of you (on the same longitude line as you), vertical would be vertical, horizontal would be horizontal, and the two would be 90 degrees apart. Now if you swing the dish to a satellite far to the east or west of your longitude line, the apparent polarization of the signal skews or twists. Vertical is still 90 degrees separated from horizontal, but rather than being straight up and down (vertical) it can be shifted to the right (clockwise) or left (counter clockwise) from a satellite that is **due south** of you. The further the satellite is west, or east of you, the greater this 'twist' or 'skew.'

So you set the polarization up on F4, and it is more or less due south of you. Now you swing to F3R and what happens? There is some 'cross pole signal' (i.e. the opposite, unwanted polarization) leaking through. It looks like a (vertical) bar down the screen, or if it is not quite that bad, you have unusually heavy noise (coming from the opposite polarity modulation signals) in the desired polarization. Yup, 90 degrees is no longer 90 degrees. Well, it is, but it is **not the SAME 90 degrees!**

Does this mean that you cannot really use a Polarotor 2 device (or any polarization switching system that simply moves your up-front probe in straight 90 degree switches)? Yes, and no.

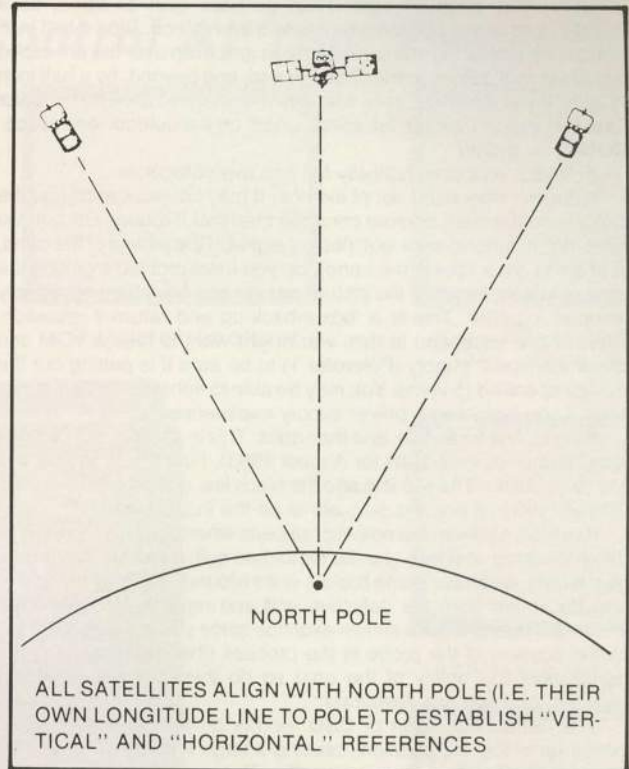
What it means is that you have to have some type of 'skew adjust' in the system. It may be a manual skew adjust (front panel control on the receiver; rear panel if the designer wasn't thinking properly), or, it may be a fancy automatic skew adjust that senses where the dish has moved to, and then corrects for that much geo-stationary belt movement by telling the Polarotor 2 to shift a little one way or the other. If you don't do this?

No problem if you install in areas where most of the signals are strong, and about equal in strength. But when you get to either coast, or the southeast, or outside the USA, this problem can be a tough one to solve.

WIRING Up The Polarotor

There are three wires connecting the controller (or receiver in the case of Polarotor 2) to the motor/probe. Coming out of the controller, the red wire is a 5 volt level, the black is ground and the white one is a 'pulse.' What is critical about any of this?

Wire size. Chaparral tells you that you must use certain gauges of wire for various 'run lengths.' What does this mean? Simply that as you **increase the length** of the run between the controller (receiver) and the motor/probe, you have to also **increase the diameter** of the wire connecting the two together. Larger wire has lower resistance,



and that means there is less 'drop' in voltage for a given length of wire. Too little voltage will cause many problems; the end result being the Polarotor will not operate.

Chaparral tells you that the 'maximum resistance' in the cable should be 1.3 ohms. That one may be tough to equate to your friendly local Rado Shack store; they don't always specify the resistance factor for their cables. Here is a quick guide, but you will possibly need to apply some elementary math as well:

- 1) If the run is **80 feet or less**, use wire size as small as #22 (larger won't hurt);
- 2) If the run is **between 80 and 130** feet, use #20 gauge wire (or larger);
- 3) If the run is **between 130 and 200** feet, use #18 gauge wire (or larger).

If your run is longer than this, compute your losses by finding out the resistance of the cable (usually stated as so many ohms or parts of an ohm, **per 100 feet of wire**). For example, if the resistance is specified as .4 ohms per 100 feet, and you need to run 300 feet, how do you figure this out?

Simple enough. The maximum resistance Chaparral recommends is 1.3 ohms. If you have .4 ohms per 100 feet, and you need 300 feet, then your total wire resistance will be 3 (for 300 feet) times .4 (resistance per 100 feet) or 1.2 ohms. That's close, but on the safe side of 1.3 ohms.

The Polarotor gives you three short pigtailed wires (about 9 inches long) coming out of the motor housing. A red, a white and a black. The common sense thing to do is to find a cable that has three wires inside of a poly jacket; and to find a cable that has a red, white and black wire. In that way you can splice/match the red to red, white to white and black to black. That's at the feed. Inside, you do the same thing. By keeping all of the colors the same, all the way through, you have less opportunity to forget what colors connected to what other colors outside, after you are inside. The wires coming out of the motor (and the controller) are very thin and very easily broken. Use a very light action cleaning/stripping the colored insulation from the wires. Clean back 1/2 inch and then splice by tightly wrapping the appropriate wires together. Wrap one set (red to red, for example) and then take a three inch piece of electrical tape and **wrap just that splice**. Now repeat for white to white and black to black. **And wrap each individually,**

carefully, with electrical tape. Then go back over all three, as a 'bundle,' and re-wrap again with a new 5 inch piece. Start a half inch to inch one side of the start of the splices and wrap over the pre-taped individual wire splices to the opposite end, and beyond, by a half inch to inch. If you live in an area with lots of moisture, take some **Coax Seal** and wrap it over the full splice length on the outdoor-end splice.

OOOPS — It Quit

Polarotor problems typically fall into two categories.

It doesn't work right, out of the box. It may not work at all (i.e. the motor is on the fritz), or more common than that, it rotates OK but you have that 'mid-band-suck-out' (loss of signal in the middle of the band, or at some other spot in the band), or, you have problems getting the unwanted polarity out of the picture on one or a few channels closely grouped together. This is a 'box-it-back-up and return-it' situation. There is one exception to this; you **might** want to take a VOM and check the power supply (Polarotor 1) to be sure it is putting out the voltage specified (5 volts). You may be able to substitute a part or two here, if you have some power supply experience.

It works fine for awhile, and then quits. This is another one of those 'logic' exercises (see **CJR** for August 1983). First check to see that you have power. The red line and the black line should read five volts between them. If not, the problem is on the indoors end.

If you have power, but nothing happens when you flip the switch or rotate the knob, that tells you the motor has quit. If you are clever with your hands, and have some broken units around, you may be able to strip the motor from the defective unit and replace it with another motor. But that is a quite critical exercise since you are able to screw up the position of the probe in the process (thereby destroying the signal reception ability of the unit) so do this only as a learning exercise, or if you are desperate.

The September issue of **CSD** reports on a Polarotor unit that locked up in the 'on' position, causing a large amount of heat to be dissipated in the plastic hand controller. The controller started to melt after a few minutes of being 'locked on'; the case was literally turning into a plastic liquid. You should be aware that this **CAN** happen, and that if a customer ever calls you to report the controller 'feels warm' or worse yet, 'hot,' the very first thing you should tell them to do is to yank the AC plug/power supply out of the wall. **Promptly.**

In a subsequent issue we will look at the wide variety of polarization rotation units from Boman, and discuss how they differ in many ways from the fabled Polarotor unit.

CALENDAR/ Through December 1st

OCT 18/21: 'Space Communications In The 80s' (conference on risks of investing in satellite communications, other forward technologies). (Washington, DC). Contact 202/331-1154 (***).

OCT 23/25: 'Televant 83' (conference preceding ITU meeting; policy, regulatory, technical aspects of European telecommunications). (Geneva, Switzerland). Contact 202/857-4612. (**).

NOV 3/5: 'SPACE Convention and International Exhibition' (1983 annual meeting of Society for Private And Commercial Earth stations). All day "Coop Technical Seminar" Nov. 3, "SMATV Seminar" Nov. 4, International seminar Nov. 5th. More than 225 exhibit hall booths, Senator Barry Goldwater, R.E. Ted Turner (WTBS), others. Orlando, FL. Contact 202/887-0605. (****).

NOV 19/20: 'Great Lakes/Ohio Valley Satellite Technical Show and Consumer Fair' at University Hilton Hotel, Columbus. First time event, open to dealers only on 19th, general public on 20th. Special activities for registered dealers, door prizes. Contact 800/592-1956 outside of Ohio, 800/592-1957 within Ohio. (No rating; first-time event.)

NEW BIRDS/ Through December 1st

Hughes Galaxy II scheduled to begin testing of 24 transponders at 74 west around 15 October. Bird largely pre-sold for narrow band data and telephone communications. Video **not** expected.

RCA F2R testing at 72 west, 24 channels, all 8.5 watts.

AT&T TeleStar I should begin operations at 95.5 west replacing ailing D1/D2 birds flown in combination at same location, at any time. 24 channels, all 8.5 watts, moderate use by television net-

works (CBS and ABC) expected.

Explanation of rating system:

- * — Event **not** recommended.
- ** — **Marginal** event with one or more serious flaws.
- *** — **Good** event, recommended if topic matter is of interest to you.
- **** — **Superior** event, recommended if you have any interest in satellite communications.

PRODUCT NEWS/ continued from page 2

announces Skywalker II, a programmable actuator and control system. Sixteen satellite positions may be stored in memory; illuminated lights indicate antenna position. Three-digit LED display and adjustable externally set limit switches. Automatic back-up memory retains programmed positions for up to one week. Dealer pricing 2-49 is \$599 and 50+ is \$420 per unit.

INSTALLATION ACCESSORIES

UNIVERSAL ELECTRONICS (4555 Groves Rd., Suite 3, Columbus, Oh. 43227; 614/866-4605) announces new retail dispenser packs for **Coax Seal**; the weatherproofing material recommended for all TVRO installations. The 50 foot 'industrial roll,' commonly used by TVRO installers, continues to be available with six rolls per case.

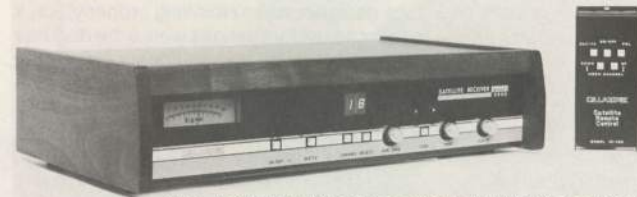
MICRODYNE CORPORATION (P.O. Box 7213, Ocala, FL 32672; 904/687-4633) announces SCB-2 Subcarrier demodulator to recover audio from FM subcarriers carried along with video signals on satellite transmission systems. The unit is a companion for the 1100 series video (plus audio) receivers and may be ordered to recover from 1 through 4 additional audio subcarriers between 4.5 and 7.5 MHz. Output is 600 ohms, front panel controlled from 0 to 6.8 volts in level.

MICROWAVE FILTER COMPANY (6743 Kinne St., E. Syracuse, NY 13057; 800/448-1666) has released model 4373 bandpass filter for satellite TVRO receivers using the block down conversion technique. The filter will pass any 200 MHz portion of the 900 to 1400 MHz band with a 1 dB bandwidth. Insertion loss is 0.8 dB and input/output impedance is 50 ohms. Price is \$900.

MICROWAVE FILTER COMPANY has also announced model 4088-FM/FF, a DC inserter to block or insert DC power into a TVRO system between 220 and 720 MHz. F female/male connectors are standard, 75 ohms. Maximum insertion loss is 0.5 dB and price is \$125.

RECEIVERS

GILLASPIE AND ASSOCIATES (365 San Aleso Av., Sunnyvale, Ca. 94086; 408/730-2500) announces their new model 9600 TVRO receiver with wireless remote control is now being manufactured and shipped from a new conveyerized, computer aided testing and production facility. Other 9600 features include built-in switchable channel VHF modulator, digital transponder read-out, automatic polarization switching control, tunable audio, video invert and AFC.



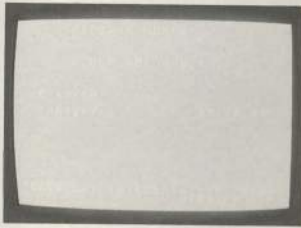
GILLASPIE REMOTE controlled TVRO receiver.

STS/Satellite Technology Services, Inc. (St. Louis, Mo. 314/423-6564) announces that all present owners of their Swedish import **Luxor model 9530** receiver can return them to the St. Louis firm for updating with the latest features found in the recently released 9540 unit. STS will add an internal modulator, align the receiver, add recently released factory upgrades and add a remote control sensor to allow the receiver to be controlled from numerous locations throughout the house.

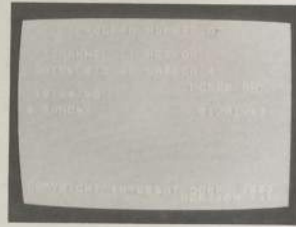
INTERSATTM

The innovators in
Satellite Communications!
2 Hood Drive St. Peters, MO. 63376

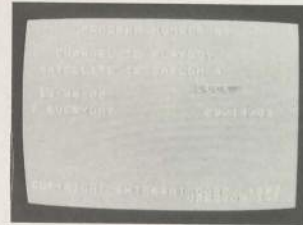
The IQ-160 . . . Complete Control At Your Finger Tips



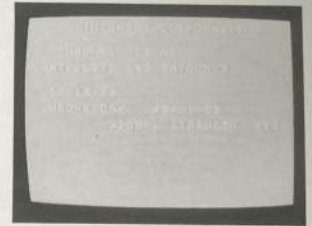
Set Day, Date, Time



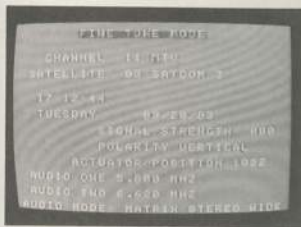
Selects Lockout, Power On,
Power Off



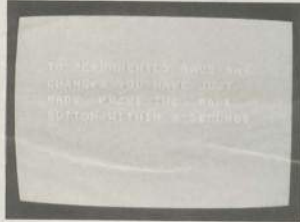
Parental Lockout



Channel #, Satellite,
Day, Date, Time



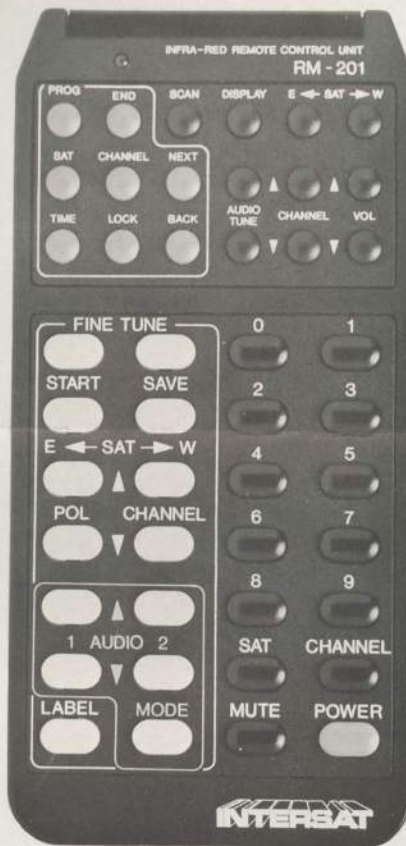
Label Change, Satellite
Location, Fine Tunes Audio



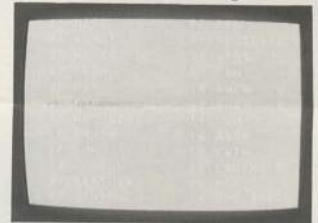
Stores All Changes
In Program



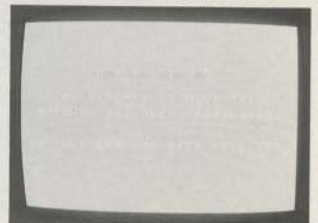
8 Modes of Audio/Tunable
12 Watts Stereo



Available Satellites
for Viewing



Available Channels
On Each Satellite



Alerts You To Antenna
Not Moving

IQ DISTRIBUTORS

ALABAMA
MOCK DISTRIBUTING CO.
DECATUR, AL. 35602
205-355-1234

CALIFORNIA
HOUSE OF AZTEC
HUNTINGTON BEACH 92649
714-898-8124 or 963-8694

CANADA
COMMANDER
MISSISSAUGA, ON. L5M 2B5
416-826-8066

NATIONAL ELECTRIC
REGINA, SASK. S4R-1J1
306-569-2882

COLORADO
INTER-STELLAR SYSTEMS
LAFAYETTE, CO. 80026

FLORIDA
E.T.'s
OSPREY, FL. 33559
813-966-6916

GEORGIA
SATELLITE MARKETING
DOUGLASVILLE, GA. 30134
404-949-1300

ILLINOIS
RHODES SAT. CONNECTION
EFFINGHAM, IL. 62401
217-347-0469

INDIANA
KINGS ANTENNA SERVICE
ANGOLA, IN. 46703
219-665-7293

TOTAL SOUNDS INC.
EVANSVILLE, IN. 47711
812-477-6456

IOWA
SAT. HOME ENTERTAINMENT
MARION, IA. 52302
319-393-0965

KANSAS
SATELINK
KIOWA, KS. 67070
316-825-4239

UNIVERSAL SATELLITE
ANDOVER, KS. 67002
316-733-2487

KENTUCKY
RANDOLPH, HALE, &
MEREDITH INC.
BOWLING GREEN, KY. 42101
502-781-1460

LOUISIANA
PETERSON ELECTRIC
JONESBORO, LA. 71251
318-259-8891

SAT. TECH
BOGALUSA, LA. 70427
504-735-9915

MISSOURI
ESA
ST. PETERS, MO. 63376
314-278-2772

DOCKERY SATELLITE
WARSAW, MO. 65355
816-438-6192

MONTANA
BURTON SATELLITE
BIG FORK, MT. 59911
406-837-5481

NEBRASKA
SATELINK
NORTH PLATTE, NE. 69103
308-534-4836

NEVADA
CHALLENGER SAT SYSTEMS
LAS VEGAS, NV. 89122
702-452-2263

NEW JERSEY
PATMAR TECH.
BERNARDSVILLE, N.J. 07924
201-766-4408

OHIO
PORTER SATELLITE
NEWARK, OH. 43055
614-763-4296

OKLAHOMA
STAR-COM
OKLAHOMA CITY, OK. 73128
405-946-0087

PENNSYLVANIA
BIRDWATCHER SAT. TV
SYSTEMS
ALTOONA, PA. 16602
800-252-3871

WALTON SATELLITE TV
LEBANON, PA. 17042
717-272-2064

SOUTH DAKOTA
WARREN SUPPLY
SIOUX FALLS, SD. 57104
605-336-1830

TENNESSE
AMERICAN VIDEO CORP.
KINGSPORT, TN. 37664
615-246-3731

TEXAS
CUSTOM VIDEO
LONGVIEW, TX. 75601
214-758-4056

STAR-COM
BIG SPRINGS, TX. 79720
915-263-7512

RIO RADIO
MCALLEN, TX. 78501
512-682-5224

UTAH
SUNDANCE SATELLITE
NIBLEY, UT. 84321
801-245-4768

VIRGINIA
CNI
LEESBURG, VA. 22075
703-777-6960

TEL-SAT EAST
FRONT ROYAL, VA. 22630
703-636-1777 or 635-3205

VESS DIST. & MANUFACTURING
BUCHANAN, VA. 24066
703-254-1776

WEST VIRGINIA
CENTRAL SUPPLY
WILLIAMSBURG, WV. 26187
304-375-6054

WISCONSIN
SAT. RECEIVERS, LTD.
GREEN BAY, WI. 54302
414-432-6851



Great Expectations

We've used our considerable engineering and marketing experience to design and manufacture what we think will be the best performing TVRO system the world has seen. The new Paraclipse 16 will greatly reduce the expense and complexity associated with downlink for rebroadcast systems. The Paraclipse 16 offers outstanding performance at a very manageable size and price.

The Paraclipse 16 is lighter, stronger, more accurate and less affected by weather than any commercial equipment available. The Paraclipse 16 is shippable, easily assembled and can be installed almost anywhere. Our welded aluminum rib and ring truss system forms an incredibly strong framework that will remain distortion-free under the worst conditions. It is this perfect parabolic symmetry that allows us to reduce the overall diameter of the antenna with no loss of performance.

The new Paraclipse 16 is everything you have come to expect from Paradigm Manufacturing: excellent performance at an unbeatable price.

Paraclipse
HIGH PERFORMANCE
SATELLITE TELEVISION SYSTEM

PIONEER MEMBER OF
SPACE

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