CABLE READY TV SETS - AN OPERATOR'S VIEWPOINT

Gerald L. Bahr

COX CABLE COMMUNICATIONS, INC.

ABSTRACT

The television set manufacturers appear to be creating a new generation of television technology, the cable-ready television. As this technology spreads throughout the industry, the question of its value to the consumer and its impact on the cable industry grow. There appears to be three distinct approaches; the 105-channel set (35 VHF - 70 UHF), the 2-channel set, and the tunerless baseband monitor. This new concept amplifies the need for cooperation by all concerned. The critical areas of agreement include channel designation, frequency format adaptability, retrofit modularity, and probably most important, descrambling and addressability compatibility.

Any of the three approaches the television set vendors have taken, the 105-channel set, the 2-channel set, and the tunerless baseband monitor, can be successful if the set manufacturers and the cable industry will coordinate the effort. If these issues are satisfactorily resolved, cable-ready TV sets can provide new business opportunities for both industries and enhanced value to the consumer. Only through a cooperative effort can the apparent morass of conflict be avoided.

I. INTRODUCTION

A. Why do the TV manufacturer's want to do it?

The question at issue is whether the production of cable-ready television sets is a temporary marketing ploy by the manufacturers or an issue that needs to be addressed over the long term. No one knows for sure at this time and the answer at present appears to be only a function of marketing and financial considerations. One might well ask why the TV set manufacturers are involved in producing cable-ready TV sets. The simple and correct answer, of course, is to make money. The term "cable-ready", it is hoped, will evoke among the buying public an image of a technically superior television set, one able to provide a much greater variety of entertainment services than the dowdy old version of the competition.

All mass manufacturers, whether they be of television sets or automobiles, suffer from a malady known as "follow-the-leader syndrome". When one manufacturer offers a feature not commonly found among the competition, the other manufacturers will immediately follow with their "improved" versions. These improved versions, whether cable-readiness or sun roofs, will always appear to be bigger, better or more cost effective than the original. The cycle continues, feature after feature, in the quest for the consumer's dollar. There is little doubt that this infectious syndrome has found host among the television set manufacturers. This statement is made, not because of the existence of cable-ready television sets, but because of the rather knee-jerk manner of their introduction. I do not impune the integrity of the television manufacturing industry. In fact, I feel that cable-ready television sets are not necessarily a bad idea. Indeed, if certain standards are maintained and coordination between the cable industry and the set manufacturers established, this feature may be a benefit to the consumer, to the television set industry, and to the cable operator.

B. What's in it for the cable operator?

The problem for our consideration here is the effect of this technology on the cable system operator or whether any benefits to be derived are real. If the cable-ready TV set is properly designed and developed, it can be a great benefit to the cable operator. Let's look at a few examples that illustrate this point.

First, if, as a small system operator, you wish to expand beyond your current 12-channel system, you may be hesitant to do so because of the enormous capitalization required for converters. Since your pay services are trapped, you are not concerned with scrambling compatibilities. Therefore, if your customers each had cable-ready television sets with enhanced capacities and which require no converters, you could expand the channel capacity of your plant facilities beyond the 12 channels with a more moderate investment.

Second, if your system is larger with multiple tiers, with the use of bandpass filters, a reasonably sized basic tier could be offered without utilizing converters. Without the capital and operational costs associated with the converters on a basic tier, the subscriber rate could be much lower, thus assisting in achieving a higher basic subscriber penetration.

Finally, consider a cable ready television set of the exact opposite nature from that above: A set that would only tune channels 3 or 4, or perhaps merely a television monitor with all of the tuning and demodulation functions taking place in the converter. In this case, sets could be manufactured and sold at a considerably reduced price to the public. There would be a considerable enticement to the public to purchase these sets. However, their use requires attachment to a cable system and converter. This opens up an entirely new marketing concept for the television set manufacturer and one which has undeniable benefits for the cable system operators. The current embryonic trend toward modular television receivers may facilitate just this kind of a venture.

In summary, then, cable-ready television sets can benefit the cable operator by either reducing system capitalization or increasing penetration, or in some cases, both.

II. CURRENT INDUSTRY STATUS

With this brief overview of the cable-ready television set technology, let's look at the overall industry to see what is currently available. The matrix below denotes the available cable-ready sets. Down the left-hand column of the figure are the various manufacturers who, to our knowledge, currently offer cable-ready television sets. Across the top of each column, the headings indicate some of the features of each set. Let's take a moment to review these currently available items. The data on the chart indicates, though not every set manufacturer is represented, that there is a good start at an industry-wide phenomena.

You will note, also, that not all the manufacturers are going in the same direction. At the present time, competition among the manufacturers has precluded the adoption of any overall standards or procedures for the industry in cable-ready TV set design.

Another fact worth noting is the indication that among the many factors that influence cable ready TV set design, there has been little or no

CABLE-READY TV SETS

Manufacturer	HRC Compatible	Channels Tuned	IF Loop	Video BB Loop	A - B Switch	Comments
Hutchinsta	Yes	35 VHF, 70 UHF	No	1983	No	
Sanyo	Yes	35 VHF, 70 UHF	No	Yes	No	Petition FCC to mfg. 2-channel set
Fisher/Sears (Sanyo)	Yes	35 VHF, 70 UHF	No	Yes	No	
Zenith	Yes	42 VHF, 70 UHF	No	Yes	No	HRC automatic; modular TV being considered.
Magnavox	Yes	20 VHF, 70 UHF	No	No	No	
Curtis Mathis	'83?	35 VHF, 70 UHF	No	'83?	No	60 VHF ch. in 1983?
Hitachi	'83?	35 VHF, 70 UHF	No	Yes	No	
Sony	-	35 VHF, 70 UHF	No	Yes	-	Component TV available
Phillips	Yes	35 VHF, 70 UHF	-	-	No	
Wards/Sylvania (Phillips)	Yes	35 VHF, 70 UHF	No	-	No	
RCA	No	23 VHF, 70 UHF	No	No	No	
Quasar	No	35 VHF, 70 UHF	No	Yes	No	BB on projection model only

coordination with the cable industry. Indeed, it appears that about the only coordination has been with the FCC in order to acquire the required waivers to produce television tuners in other than the prescribed format. This lack of coordination is somewhat surprising since many of the television set manufacturers are also involved in the production of cable television equipment, such as RCA, Magnavox, Sylvania and Zenith.

III. TRENDS AND DIRECTIONS

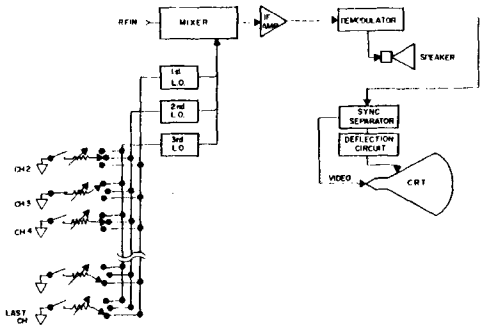
You have seen where we are now, let's look now at where the industry seems to be heading in the near term.

A. The 105-channel set

One of the major directions that many of the set manufacturers are taking is toward the production of 105-channel television sets. These sets are designed to receive the 35 VHF channels of the typical 300 MHz cable system, and the 70 UHF broadcast channels.

Several manufacturers have addressed the issue of HRC vs standard format for the channel placement. Some tuner designs first look at the standard position for a carrier, and if it doesn't find one there, it begins a search pattern to find the HRC carrier. In some TV sets, this is done automatically without the user taking any further action. It would appear that, if the industry adopted as the standard a 105-channel set that could tune HRC, standard, or IRC formats, the cable industry would no longer need to supply converters. However, this scenario would still not resolve the issue of scrambling, tiering, addressability and 400 MHz-plus systems.

MULTI-CHANNEL TV

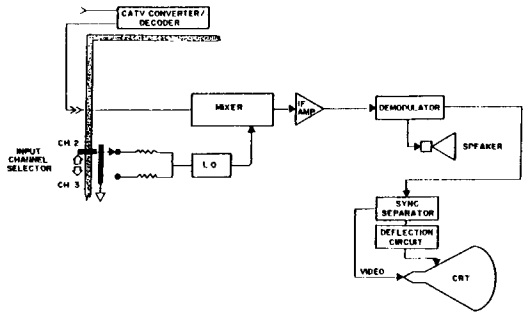


B. The 2-channel set

Another direction which some manufacturers seem to be taking, and which in many ways makes more sense, is the so-called 2-channel set. In this set design, the tuner only tunes channels 2 and 3, or 3 and 4. Sanyo is an example of a manufacturer desiring to produce sets of this design.

Obviously, with cable converters, this is all that is needed. Sanyo feels that they can build a set capable of tuning two channels with a technically superior tuner to anything else available and still sell the set for less money than the competition. Of course, the one major problem with this design is that the set is only usable on these two channels when not used on a cable system, or usable only on a cable system in which converters are used. The owner would need to purchase and install some ancillary means of tuning the television for use without the converter. This device might be an add-on module that the manufacturer has available for those who need it at some later date. A converter might also be available from the cable operator especially for this customer.

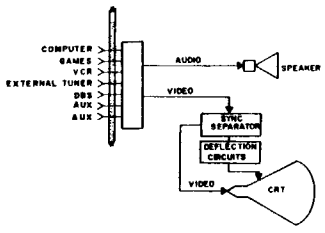
2-CHANNEL TV



C. The "no-channel" set

At least two manufacturers are considering producing modular television sets which, at the purchaser's discretion, may have no tuner at all. It would simply be a television monitor that would depend upon a new breed of converters developed by the cable vendors. These converters would output baseband video and audio rather than the signal modulated on channel 2, 3 or 4, as is used presently. Of course, the advantage of this design would be price. These sets would be inexpensive to produce and, since they are designed to be modular, a tuner (with the associated RF circuitry) could be added at a later date, if desired.

VIDEO MONITOR

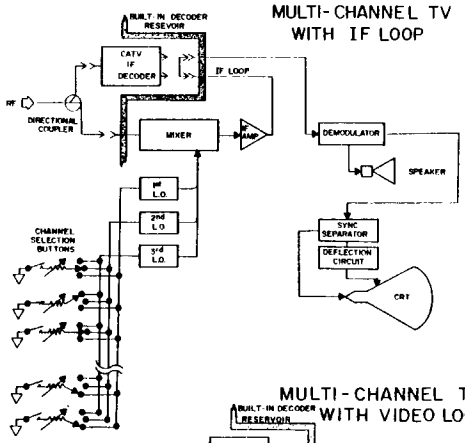


D. Scrambling/addressability

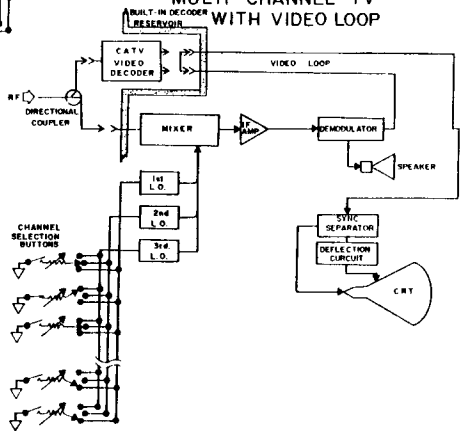
An issue which the manufacturers who desire to turn out the 105-channel sets have not satisfactorily addressed at the present time is the issue of scrambling and addressability. Virtually all of the systems that are 400 MHz utilize scrambling and most of them utilize addressable converters on at least some of the tiers. Since there is little or no standardization in the cable industry on scrambling and addressability, the set manufacturers are not certain which way to turn on this issue. One solution, of course, would be for them to bring out both an IF lead and a baseband lead to the back of the set where the cable company could attach the proper decoder or home terminal unit. This approach would be no problem for the 2-channel or the no-channel set, since they do not propose to provide any cable interface preparation as a part of the set design.

However, with respect to marketing, the 105-channel set or the 2-channel set will require cooperation with the cable industry. The no-channel set requires a great deal of cooperation in that the cable operator must provide a new converter design which outputs at baseband video. The 105-channel set, as mentioned, requires some method for the cable company to include the features of decoding and addressability. There is really no way to tell, at this time, which of these is going to be the dominant direction in the future. However, a manufacturer who designs his television set in a modular fashion will probably be in the best position since his tuner module could accomodate any one or all of the above techniques.

MULTI-CHANNEL TV WITH IF LOOP



MULTI-CHANNEL TV WITH VIDEO LOOP



IV. SOME SUGGESTED INDUSTRY STANDARDS

If all of this is going to work, some standards must be imposed, both upon the set manufacturers and upon the cable industry. I would like to suggest a few basic standards at this time.

A. Channel designation standards

It would seem, at the most primitive level, that at least we should adopt one channel designation as the standard for the whole industry. This would not seem to be too difficult to do but it is amazing the amount of resistance such a thing draws. Whether we adopt the cable nomenclature or the set manufacturer's nomenclature or an entirely new one that is logical and complete really does not matter as long as we are all talking the same language.

B. Channel spacing adaptability

One standard that must be adopted by the television set manufacturers is that all cable-ready television sets must be automatically adaptable between standard, IRC, and HRC formats. Obviously, the set is not cable-ready if it will not tune the cable channels. One manufacturer has already proven that this is not a very difficult thing to do. However, for the 105-channel set manufacturer, it does represent extra cost in manufacturing.

C. Modularity

Another requirement that should be placed upon the set manufacturers is that of modularity, especially in the tuning section. Some manufacturers are designing television sets that look very much like the current component stereo systems. This is the extreme case. However, at the very least, the tuning section of the television set should be easily removable and replaceable with an appropriate replacement module. In other words, the 105-channel set, the 2-channel set, or the no-channel set could be simply a matter of which module is plugged into the tuning section. I believe that this modularily should be standardized, industry-wide.

D. Access for descramblers/addressable converters

As mentioned earlier in the case of the 105-channel set, access must be made for a descrambler/decoder unit or for an addressable unit for those systems that are addressable. Access should be easily found on the back of the TV set and should have both an IF and a NTSC baseband access port.

E. Videotext decoder

Agreement on videotext standards is essential so that we can move forward with the introduction of this service in our industry and allow incorporation of this technology in our systems in the near future.

F. Single and dual cable

Last, but not least, future sets that purport to be cable-ready and either come with 108-channel dual cable tuners or modular such that 108-channel dual cable tuners may be added at some future date need to be ported for dual cable drops. It is hard to say how prevalent the dual subscriber system will be in the future, but at least a number of the later franchises in the larger cities have been won by companies offering a dual 400 MHz system. It is suspected that this will be the trend throughout the balance of the systems and in future refranchising efforts in the larger areas.

V. CONCLUSIONS AND RECOMMENDATIONS

A. What won't work?

What won't work is the cable industry and the set manufacturers going their own ways and ignoring each other or actually setting up adversarial relationships in which only the consumer loses. We talk about wanting less and less government regulation of our industry, but in order to accomplish that, then we must be self-governing and to the benefit of the consumer. This would be a good opportunity for us to show the federal government that we can do it without their bureaucratic intervention, but to do that, we must work together harmoniously to set the standards and directions for this new product.

B. What will work?

What will work, then, is obviously cooperation among all of the parties. At the present time, there is an NCTA/EIA consortium working on setting recommended standards and some directions to solve these issues. As an industry, and I am referring not only to the cable system operators but especially to those vendors who manufacture converters, we must join hands with the set manufacturers in support of this consortium and be willing to abide by the recommended standards that are issued from it. If we do so, I think the advent of cable-ready TV sets can be a positive benefit to the set manufacturers, the cable industry, and most of all, the consumer.