

The Electronic Signal Generator

OBJECTIVE

The electronic signal generator is a companion piece to the signal collector box. It will generate the signals to be collected by the signal collector.

Witnessed to this point April 6, 1981
Eugene A. Sauron

At Lunch
with Jim
Cuddihy
4/7/81

I discussed the signal collector and generator devices with Jim Cuddihy at lunch today, April 7.

I stated that the box could have a variety of business applications and related one as collecting television network station break signals for the purpose of aiding the networks in billing cable systems.

We discussed where the signal should be carried in the frequency spectrum and Jim suggested the most efficient place would be in the audio range above the actual audio signal.

He asked me whether the input to the collector would be a converter box or whether it would be the cable itself. I suggested that I suspected that we would use certain elements of the converter, and that in effect, the input would be a point midway through the converter.

He asked me the word length of the data to be carried and I estimated it as a 40 bit word.

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I told him that I had anticipated each word would have a leading bit which would identify it to the ~~into~~ receiving units in the box as a bit of data to be collected. Jim responded that this would be costly because it would require that the box be tuned to all channels at all times.

We discussed the desirability of having a buffer and a tape unit or just a buffer alone. I observed that this was a question of the trade off between the cost of the units and the cost of the communicating with the units. I suggested that the tape was probably desirable to reduce the number of times the box was communicated with over the telephone.

Jim asked where the signal would be inserted, and I responded that it would be inserted at the point of programming origination.

Returning to the question of where the signal was picked up by the box, Jim suggested that if the signal was included in the audio range, all we would require in the box would be the audio demodulator portion of the converter and perhaps it would be least costly to design it to sample all of the channels rather than having a receiver unit on each one. I responded that it wasn't essential to have a receiver on each and so as to be able to identify specifically which channel in a local system the signal came over. This would mean that the box potentially would be collecting all signals in the particular audio range that the signals are transmitted on frequency that the signals are transmitted

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the box. I replied that a clock wasn't essential because the time could be inserted in Greenwich Mean Time at the point of signal's origination and the time that a local system on the signal could be inferred from the signals immediately surrounding any given target signal on a box's tape.

Jim also observed that the box could be designed automatically to dump its memory, whether from tape or buffer, to a designated telephone number. I stressed that the way the box was communicated with was a security issue, and I would have to reflect on this.

Jim and I discussed the terms of a potential working arrangement. He stated that he would like to design the system, and we could find someone to design the circuitry. I showed him my draft contract. He read it and stated that he was perfectly happy with its terms. I asked him if his employment terms with Teleprompter gave him the latitude to do this type of work without Teleprompter having a claim on it. He responded that he has that latitude. I asked him what the price for his services would be. He replied, "A dollar an hour." He added, "And if you make \$20 million perhaps you could remember me." I told him that I wanted to be co-inventor of the device, and he stated that that covered him. ~~I told him that no problem.~~

I told him that I would draft a contract, and we agreed to meet at his home at 9:00 tonight to execute it.

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IPR20

THOUGHTS
FTER
LUNCH

After reflecting on the design points that we discussed at lunch, I think of the following points:

- We must ensure that the above-the-audio frequency that we choose doesn't interfere with potential expansion of the TV practice into such areas as stereophonic signal transmission.
- We must ensure that commercial video tape recorders capture this above-the-audio signal and retransmit this above-the-audio signal.
- I must check into the security of an 800 telephone number in the event we choose to have the boxes dump automatically. Also will Bell give us a contract that we can keep the same number forever? Should we have a default 800 number for possibility that the primary number is out of order? Also will we probably need the capacity to The box will probably be designed to dump automatically when a certain percentage of its tape capacity is filled but we will also want to be able to dump to the 800 number by giving a command to the box.
- If we are picking up all signals on our chosen frequency, we may wish to process the signals before recording them to tape to discard irrelevant signals and duplicate signals.

Witnessed to this point April 7, 1981.

Ernest A. Larson

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EMPLOYMENT AGREEMENT

This agreement incorporates only what appears in writing from this point in this book to the point below, at which it is signed by the parties to the agreement.

James W. Cuddihy of 523 East 14th Street, New York, N.Y. (hereinafter "Jim") hereby agrees to help John C. Harvey of 333 East 57th Street, New York, N.Y. (hereinafter "John") design and develop the devices known as the "signal collector box" and the "electronic signal generator" in exchange for \$1.00 (one dollar) per hour.

Jim agrees to notify John whenever the number of hours that Jim spends on this project reaches a multiple of twenty-five, and John agrees to pay Jim at that time. If, at any time, John asks Jim to halt work on the project, Jim will not work until instructed to continue.

Jim represents and warrants to John that no other party or employer has any legal right to the fruits of Jim's labor during those times when Jim will work on this project.

In consideration of this employment, Jim hereby assigns to John all right, title, and interest in any invention or discovery, whether patentable or not, that he conceives or actually reduces to practice while developing the abovementioned instruments. Additionally, Jim agrees to keep all matters related to these devices and all John's business plans confidential until John makes full public disclosure of them. 4/11/44

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~~Either Jim or John may end Jim's employment under this agreement at any time by notifying the other. At such time, John agrees to pay whatever is due him up to the time of notification, and Jim agrees to turn over to John all papers, drawings, models, devices, and any other objects and materials relating to this project.~~

The provisions of this agreement apply for five years after termination of this agreement.

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JAMES W. CULBERT
4/7/81

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FURTHER
THOUGHTS

Before getting together with Jim yesterday, it occurred to me that for tiered systems the box will need to be adapted to be able to identify the tiers and which tiers signals come over.

MEETING
WITH Jim
CUNNINGHAM
AT 9PM
4/7/81

Jim and I sat down at his living room table. I showed him the document on pages 12 and 13 of this book, ~~was to~~ he read it. We both executed it and also executed two xerox copies of it, one of which he kept. Jim then said, "At last Jim employed."

(Besides the one executed copy of the employment agreement, I also gave Jim xerox's of pages 3 through 10 of this book. He had not read that portion of this book before I left.)

Having executed the agreement with him, I then explained the business purpose for the signal collector. I explained that the box ~~would be~~ would be introduced initially for the collection of signals transmitted over cable but that ~~it was~~ the process would rapidly be expanded to include signals transmitted over broadcast TV and radio. I firmly believe that there will be further commercial applications.

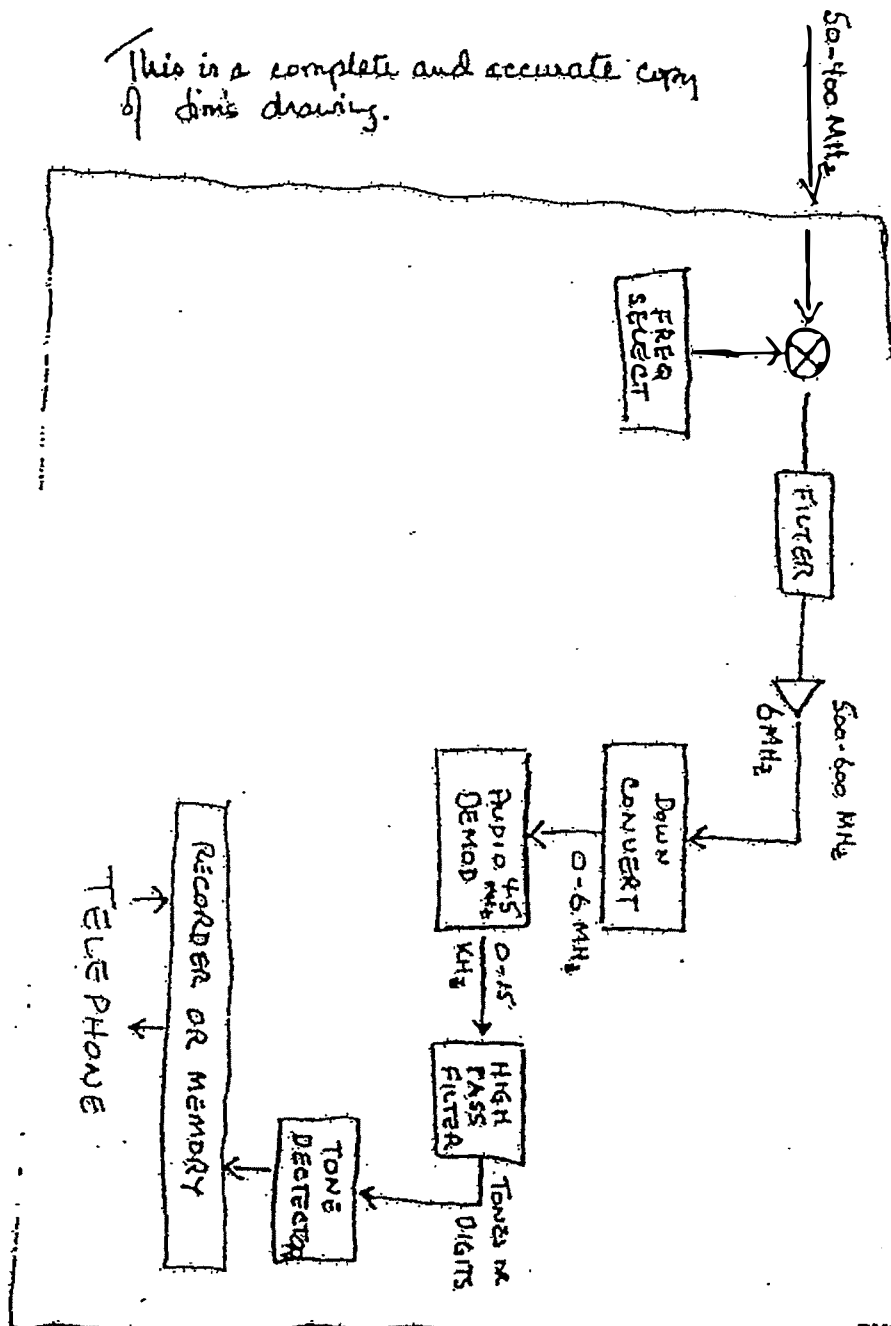
We discussed the data to be transmitted in the signals and agreed that potential word length should not need to exceed 50 bits.

Jim sketched out a box design that I have copied ~~on to the reverse page~~. Potential box designs, taking about 5 minutes to do it, that I have copied onto the reverse page.

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This is a complete and accurate copy
of Jim's drawing.



CABLE TV SIGNAL COLLECTION BOX

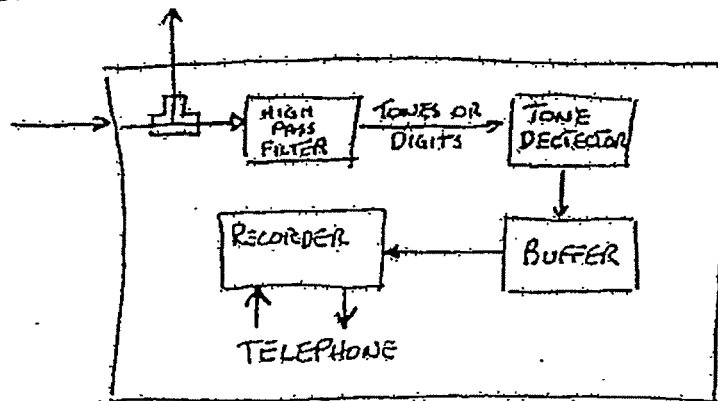
PMCS 10189

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SECOND
BUSINESS
PURPOSE

This morning, April 8, while ruminating, I realized that the signal collector box could, with modifications, accomplish a second business objective.

In this configuration the box would look like:



In this application the recorder may not be necessary and we may, instead, have two buffers. Also we may require a video filter.

Witnessed to this point April 9, 1981
Eugene A. Lawton

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FURTHER
THOUGHTS

TELEPHONES

To minimize operating costs, the box probably should not have its own ~~independent~~ independent telephone line. Rather it should share a phone connection with ~~somebody's~~ its host's telephone. Perhaps it would only transmit during night-time hours.

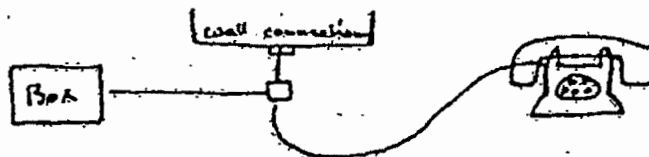
It would only make outgoing calls.

The computer would accept and process ~~into~~ the box's data only if the proper end-of-transmission signal were received. If someone were to pick up the party line phone in the midst of a box to computer transmission, the box ~~to~~ ~~would~~ ~~the~~ computer would break off the transmission and would dump the box's data. The box would only call when it had a ~~dial tone for 30 seconds~~ ~~uninterrupted~~ dial tone. ~~for 30 seconds~~. If the box had gotten a busy signal when it called ~~there would be~~ or had been interrupted, it would not call again ~~for 10~~ ^{minutes}.

When the computer received the end-of-transmission signal, the computer would instruct the box to go back to the start point in its tape and record over old data.

There would be several lights and a button on the outside of the box. A green light would signal that the box was on. A red light would signal that the box was sufficiently full to want to communicate with the computer but had not been able to reach the computer. The button would manually set in motion a call to the computer.

The telephone link might look like:



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1 COMPETITORS

4/10/81

ost's

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Jim telephoned today to say that he had met yesterday with some people from the company that is the Bell Labs of Canada who had shown him an addressable converter that has many features similar to our box. He indicated that their converter is not precisely like ours and rather apparently is not ~~our~~ targeted at our business purposes. He indicated that they have applied for patents.

He

We must move rapidly, among other things, to get over-the-air TV and radio patents on our system.

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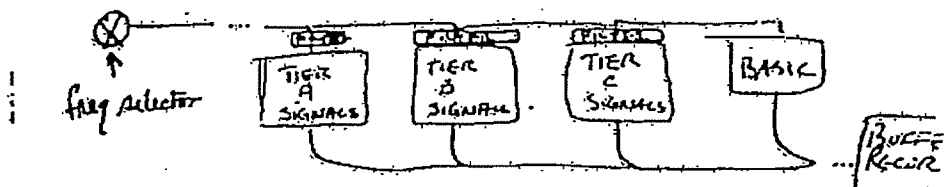
minutes

TIERING

CONSIDERATIONS

Perhaps the answer to the tiering problem is to install ~~one box in~~ two boxes in each system for that system's each of that system's tiers.

Or - Design the boxes with the capacity for a series of shunts at an appropriate point in the box similar to a coin sorting machine:



where a bit of data would be added as an identifier as the signals went through the various shunts.

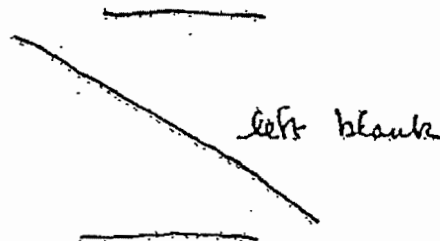
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To
minimize
the number
of signals
recorded,
transmitted
by means,
any
preference
by the
computer

Our buffer should ~~process~~ compare incoming signals with one another and transmit no more than two copies of any given signal to the recorder. All other identical signals should be discarded.



Tiers &
Ratings
Boxes

It would be useful if the ratings boxes could identify which tiers & pay services the viewer could receive. Obviously this could be stored in the computer and analysis of signals would tell something. But it would be nice if the boxes signal would regularly disclose this information.

Witnessed to this point April 10, 1981
Eugene A. Lamm

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Meeting with
CUDITH
on 4/11/81

Jim and I sat down at his dining room table and he gave me the diagrams reproduced here on pages 19 and 20.

We discussed the second business purpose noted above and he observed that the Broadcast Signal Box could handle this process.

I asked him if the signals could be transmitted in any way besides audio. He responded that they could also be transmitted in video and over other frequencies. We decided the boxes could accommodate signals transmitted

in these other fashions.

We discussed the desirability of identifying tiers, and left this issue largely unresolved.

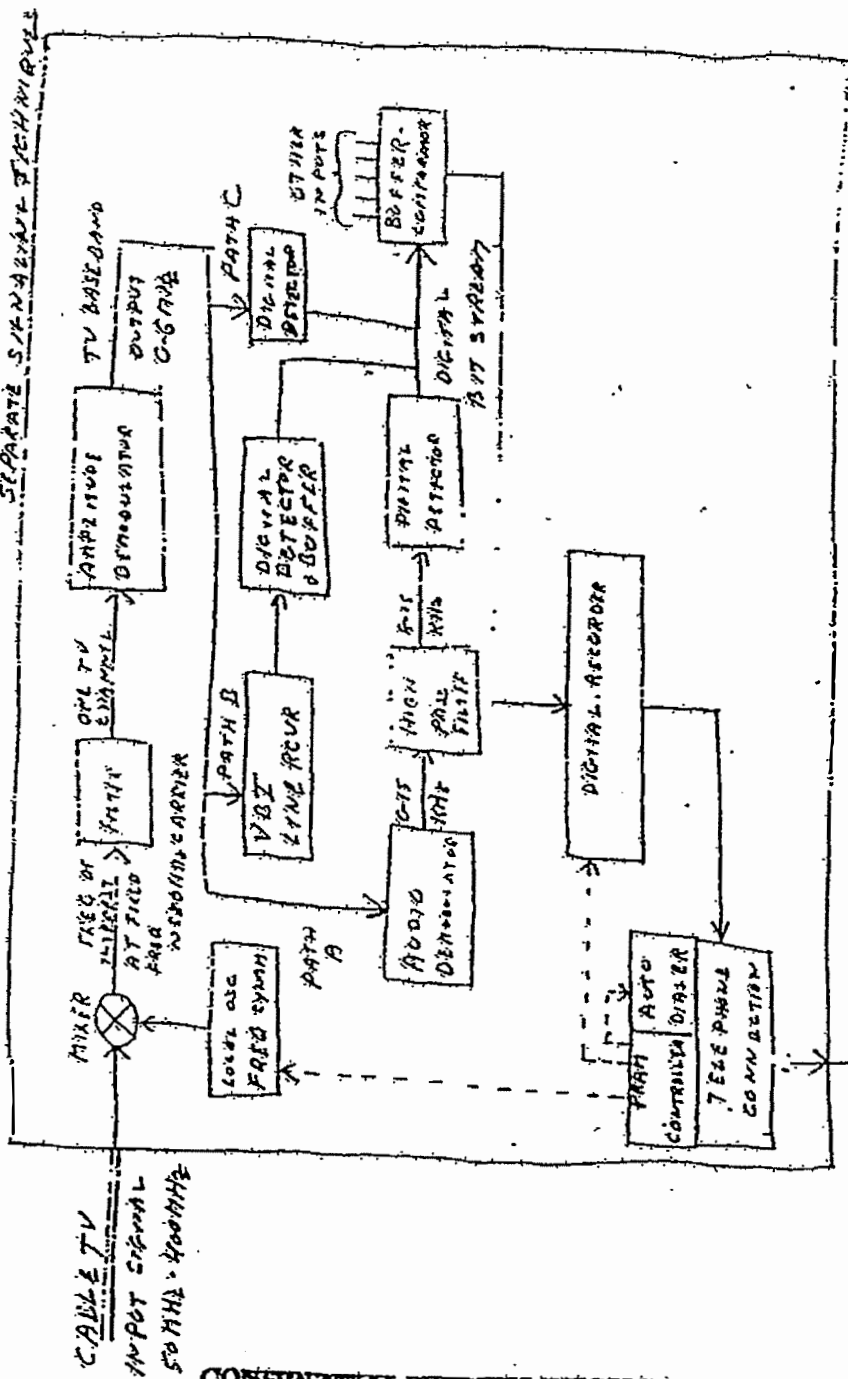
Also we discussed a ~~time~~ clock, and he suggested that one could be put in the PCM computer.

We also agreed to the buffer-comparator to discard duplicate signals.

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CABLE TV SIGNAL COLLECTOR BOX - AUDIO & VIDEO + SEPARATE SIGNALS & TECHNIQUES



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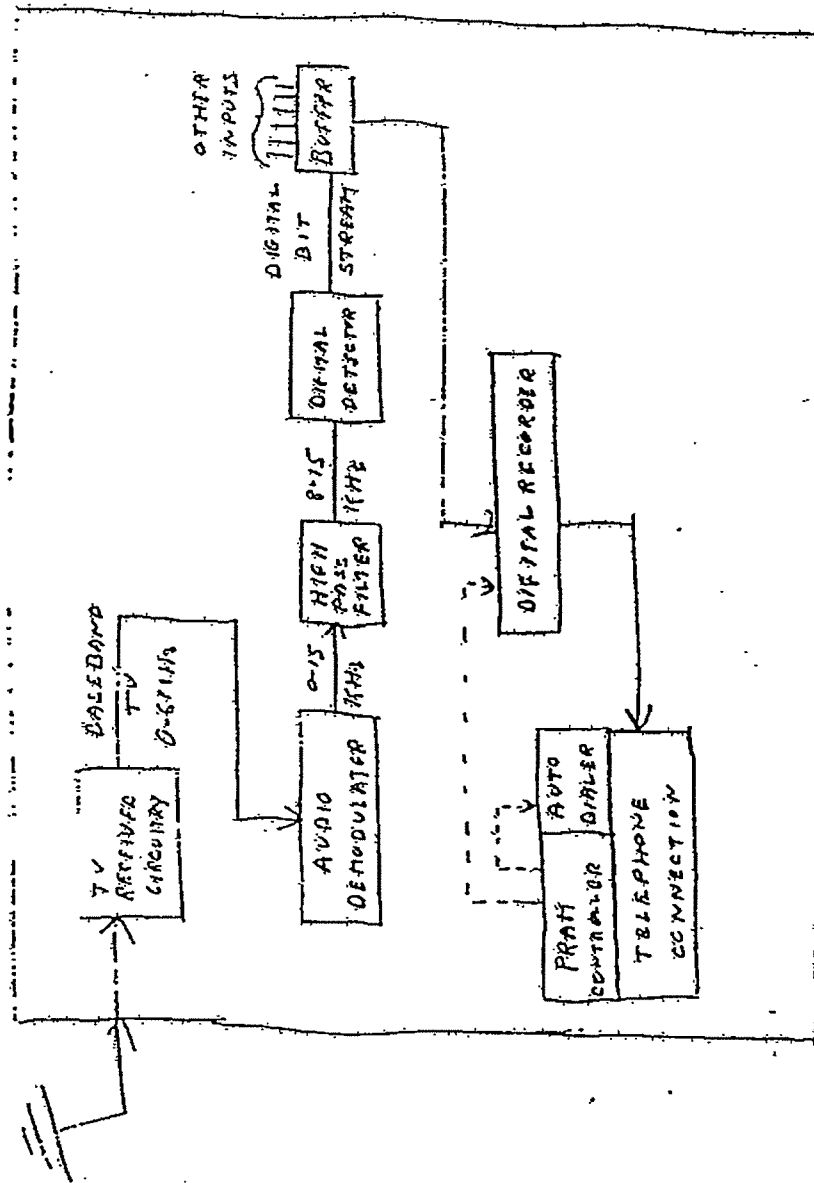
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FOR AUDIO SIGNALS
FOLLOW PATH A
FOR VIDEO SIGNALS
FOLLOW PATH B
FOR SEPARATE SIGNALS
FOLLOW PATH C

SIGNAL FLOW

SEPARATE SIGNALS & TECHNIQUES

BROADCAST TV SIGNAL COLLECTOR BOX



SIGNAL FLOW

CONTROL INFORMATION

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