FCC(50,50) data to FCC(50,90) data in the bands. SS/WP3 has prepared a document which shows the planning factors that will be used for each transmission band. Such factors are obviously not accounted for by all proponents.

Furthermore, peak to average power ratios are measured in ATTC tests, and these measured values should be used for Working Party analysis, in conction with SS/WP3 planning factors. Further, we believe that SS/WP3 should provide average and peak transmitter power values for service area equal to NTSC, based on ATTC test results. Unsubstantiated proponent claims should not form the basis for any comparative analysis of systems.

2. SIGNAL FORMS

MPEG fully supports intraframe compression in addition to interframe compression. Intraframe compression will likely be used at 216 Mbps level.

5. ENCODING/DECODING

The Group of Pictures structure in MPEG has an advantage for coding/decoding concatenation, since I, P and B frame types can be coded the same way in subsequent coding. While doing so will improve concatenated quality, it is not necessary, and it in no way imposes a constraint.

COMMON CARRIER

2. SONET

Two 24 Mbps AD-HDTV data streams may be accomodated by SONET 51.84 Mbps. Similarly, higher data rate signals may be accomodated by the 103.68 Mbps and 207.36 Mbps SONET rates.

3. BER

In AD-HDTV, a packet error rate of $1 \times 10^{-3}$ corresponds to a raw BER of $1 \times 10^{-1}$. (Careful comparison of systems is required here -- note that Packet Error Rate, corrected Bit Error Rate, raw Bit Error Rate and Symbol Error Rate are not uniformly discussed by the proponents.)

CONSUMER

2. VCR

AD-HDTV's constant bit rate results in simpler data handling/reformatting in a VCR when compared to other systems that use variable bit rate transmission.

IS/WP2-0235
20 AUG 92

GENERAL INSTRUMENT

**VideoCipher Division**
General Instrument Corporation
6262 Lusk Boulevard
San Diego, CA 92121
619/455-1500
FAX 619/535-2486

August 14, 1992

Merrill Weiss
Vice Chairman, IS/WP-2
Fax: 908/906-0999

Dear Merrill:

Enclosed, at last, please find tables accompanying the transitional and minimal television station block diagrams, filled in with information for the DigiCipher HDTV system.

We hope this is useful. Thanks for your patience.

Sincerely,

Robert M. Rast
Vice President, HDTV Business Development

cc: Jerry Heller
Woo Paik
Jeff Krauss

# DigiCipher™ HDTV System

| ATV "Transitional" Television Station<br>Requirement for Equipment and Descriptions | | |
|---|---|---|
| Unit # | Req.* | Description |
| 1 | X | Demodulates QPSK signal and perform rate 3/4 viterbi decoding |
| 2 | X | Remove stuffed bits and generate digital data with proper clock |
| 3 | X | DigiCipher™ HDTV decoder with 29.25 Mb/s digital input |
| 4 | X | Graphics generator with computer control |
| 5 | X | Ditigal HDTV VTR with baseband interface |
| 6 | X | Upconverts NTSC to 1050/2:1/29.97 |
| 7 | X | Analog routing switcher under DigiCipher™ ATV master control |
| 8 | X | Existing NTSC routing switcher |
| 9 | X | Downconverts 1050/2:1/29.97 to NTSC |
| 10 | X | HDTV monitor with analog GBR inputs |
| 11 | X | DigiCipher™ ATV master control with special effects |
| 12 | X | Existing NTSC master control |
| 13 | X | DigiCipher™ HDTV receiver with analog GBR outputs |
| 14 | X | DigiCipher™ HDTV encoder with digital output |
| 15 | O | DigiCipher NTSC encoder |
| 16 | N | Not required with FDM of DigiCipher™ HDTV and DigiCipher NTSC signals |
| 17 | X | Generates STL signal after trellis encoding and 32-QAM modulation |
| 18 | X | Dish |
| 19 | X | Dish |
| 20 | X | Demodulates the 32-QAM signal and perform trellis decoding |
| 21 | N | Not required |
| 22 | X | Adds trellis encoding and interleaving |
| 23 | X | Generates 32-QAM modulated DigiCipher™ HDTV signal |
| 24 | X | ATV transmitter |
| 25 | X | Measures peak transmitting power |
| 26 | X | Transmitter antenna. There is no special requirements |

*Requirement for each Unit indicated by: X=Required, O=Optional, N=Not Needed

# DigiCipher™ HDTV System

| ATV "Transitional" Television Station<br>Signal Format Categories and Related Data | | | | |
|---|---|---|---|---|
| Signal | Cat. # | Data A | Data B | Data C |
| A | 3 | 29.25 Mb/s | Inter-field | Y...none U,V..4:1(H), 1:1(V) |
| B | 3 | 29.25 Mb/s | Inter-field | Y...none U,V..4:1(H), 1:1(V) |
| C | 3 | 29.25 Mb/s | Inter-field | Y...none U,V..4:1(H), 1:1(V) |
| D | 3 | Analog | 1050/221/29.97 | GBR |
| E | 3 | Analog | 1050/221/29.97 | GBR |
| F | 3 | Analog | 1050/221/29.97 | GBR |
| G | 3 | Analog | 1050/221/29.97 | GBR |
| H | 3 | Analog | 1050/221/29.97 | GBR |
| I | 3 | Analog | 1050/221/29.97 | GBR |
| J | 3 | Analog | 1050/221/29.97 | GBR |
| K | 3 | Analog | 1050/221/29.97 | GBR |
| L | 3 | Analog | 1050/221/29.97 | GBR |
| M | 3 | Analog | 1050/221/29.97 | GBR |
| N | 3 | Analog | 1050/221/29.97 | GBR |
| O | 3 | Analog | 1050/221/29.97 | GBR |
| P | 4 | 19.51 Mb/s | | |
| Q | 5 | Digital | 7 Mb/s | |
| R | 6 | Digital | 20+7(optional)MB/s | |
| S | 7 | 32-QAM | 6+2(optional)MHz | |
| T | 7 | 32-QAM | 6+2(optional)MHz | |
| U | 6 | Digital | 20+7(optional)Mb/s | |
| V | 4 | 19.51 Mb/s | | |
| W | 5 | Digital | 25 Mb/s | |

See associated "Key to Signal Format Categories and Related Data" for the information required in each column.

# DigiCipher™ HDTV System

| ATV "Minimal" Television Station<br>Requirement for Equipment and Descriptions | | |
|---|---|---|
| Unit # | Req.* | Description |
| 1 | X | Demodulates QPSK signal and perform rate 1/2 viterbi decoding |
| 2 | X | Remove stuffed bits and generates digital data with proper clock |
| 5 | O | Records and plays back compressed DigiCipher™ data |
| 6 | X | Upconverts NTSC to 1050/2:1/29.97 |
| 7 | X | Digital switcher with proper formatting for glitchless switching |
| 8 | X | Existing NTSC routing switcher |
| 10 | X | DigiCipher™ HDTV receiver with digital input |
| 11 | X | DigiCipher™ HDTV master control that...controls the digital switcher (7) |
| 12 | X | Existing NTSC master control |
| 13 | X | Tuner with 32-QAM demodulator and trellis decoder |
| 14 | X | DigiCipher™ HDTV encoder with digital output |
| 15 | O | DigiCipher NTSC encoder |
| 16 | N | Not required with FDM of DigiCipher™ HDTV and DigiCipher NTSC signals |
| 17 | X | Generates STL signal after trellis encoding and 32-QAM modulation |
| 18 | X | Dish |
| 19 | X | Dish |
| 20 | X | Demodulates the 32-QAM signal and perform trellis decoding |
| 21 | N | Not required |
| 22 | X | Adds Trellis encoding and interleaving |
| 23 | X | Generates 32-QAM modulated DigiCipher™ HDTV signal |
| 24 | X | ATV transmitter |
| 25 | X | Measures peak transmitting power |
| 26 | X | Transmitter antenna. There are no special requirements. |

*Requirement for each Unit indicated by: X=Required, O=Optional, N=Not Needed

# DigiCipher™ HDTV System

| ATV "Minimal" Television Station<br>Signal Format Categories and Related Data | | | | |
|---|---|---|---|---|
| Signal | Cat. # | Data A | Data B | Data C |
| A | 4 | 19.51 Mb/s | | |
| C | 4 | 19.51 Mb/s | | |
| D | 4 | 19.51 Mb/s | | |
| F | 4 | 19.51 Mb/s | | |
| G | 4 | 19.51 Mb/s | | |
| H | 4 | 19.51 Mb/s | | |
| I | 4 | 19.51 Mb/s | | |
| J | 4 | 19.51 Mb/s | | |
| L | 4 | 19.51 Mb/s | | |
| N | 4 | 19.51 Mb/s | | |
| O | 4 | 19.51 Mb/s | | |
| Q | 5 | Digital | 7 Mb/s | |
| R | 6 | Digital | 20+7 (optional)Mb/s | |
| S | 7 | 32-QAM | 6+2 (optional) MHz | |
| T | 7 | 32-QAM | 6+2 (optional) MHz | |
| U | 6 | Digital | 20+7(optional) Mb/s | |
| V | 4 | 19.51 Mb/s | | |
| W | 5 | Digital | 25 Mb/s | |

See associated "Key to Signal Format Categories and Related Data" for the information required in each column.