OPTIONS FOR CABLE COMPLIANCE WITH THE NEW EAS RULES

Shellie Rosser, Vice President Interactive Systems
ANTEC Corporation
and
Marty Callahan, President, HollyAnne Corp.

Abstract

The 1992 Cable Act stipulated that cable systems would be required to participate in the new Emergency Broadcast System, but left details of compliance to the FCC. After much deliberation and consideration of comments by the NCTA, the SCTE EBS Subcommittee, and other interested parties, the FCC issued its Report and Order on December 9, 1994, amending Part 73, Subpart G of the Commission's Rules Regarding the Emergency Broadcast System.

This paper will examine those aspects of the Report and Order that pertain to cable television systems, and will present practical options for compliance under the new rules.

THE RULES

Objectives

The FCC's overhaul of the current EBS system was undertaken with the express purpose of utilizing current technology to enable the President of the United States to exercise his/her communications-related powers in time of war or national emergency, while also allowing for more localized delivery of emergency messaging than the current EBS provides. Section 706 of the 1934 Communications Act grants the President the authority to take control of any or all stations within the FCC's jurisdiction under such circumstances. The new Emergency Alert System (EAS) is "designed to enable the President to exercise these powers quickly and efficiently."[1]

The Cable Act of 1992 amended the Communications Act by stating, "each cable operator shall comply with such standards as the Commission shall prescribe to ensure that viewers of video programming on cable systems are afforded the same emergency information as is afforded by the emergency broadcasting system..."

In the Report and Order, the Commission stated that the new rules were adopted with the Americans with Disabilities Act in mind, aiming to "make all facets of our society fully accessible to individuals with disabilities."

Process

With the intent of serving the public interest, the FCC undertook a thorough examination of the existing EBS, and solicited comments from interested parties through a Notice of Inquiry and Notice of Proposed Rule Making (1991), and a Public Notice inviting comment on a 1992

NPRM/Further Notice of Proposed Rule Making. The FCC received 63 comments and 17 reply comments in response.

Field tests were conducted in 1993 to evaluate the availability and effectiveness of new technologies. The tests convinced the FCC that newer digital technology can provide far more flexibility and reliability than the old EBS system, and that manufacturers will be able to offer a wide range of necessary equipment for both broadcasters and cable systems. The field tests also confirmed that multiple types of transmission systems could relay the digital information, and are in fact, complementary.

The FCC also conducted numerous meetings and regional workshops with state and local emergency officials, manufacturers, and interested parties from the telecommunications industry, to explore the technical and operational issues surrounding implementation of a new EBS. The Society of Cable Television Engineers' EBS Subcommittee and the NCTA were particularly active in these proceedings, and were instrumental in the final rules' determination that allows cable operators to select one of two basic options for compliance, based on cost effectiveness.

Deadlines

By July 1, 1997, cable systems must have installed and operating all necessary EAS equipment to receive, decode and encode the new digital emergency information, and to transmit the required information across all cable channels. Broadcast stations must meet a compliance deadline of July 1, 1996.

Functional Mandates

The FCC states in paragraphs 58 and 59 of the Report and Order, "We...require cable systems to maintain EAS equipment in accordance with the rules we adopt in this order. For national emergencies, we are requiring compulsory retransmission of Presidential EAS messages. Cable systems must interrupt all channels and provide information to subscribers. Although not required, we also encourage EAS activation for state or local emergencies.[2]

"Cable systems must transmit the national EAS message codes, the attention signal, emergency message, and end of message (EOM) code to their subscribers...The equipment must provide an audio message on all channels for those event codes selected by cable company personnel. Cable systems may elect not to interrupt EAS messages from broadcast stations upon written agreement among all concerned."

The FCC outlines two basic alternatives for complying with the mandate, presented here as Option 1 and Option 2. Refer to Figure 1 and Table 1 for a headend block diagram and sample

bill of materials, respectively, for Option 1. Option 2 block diagram and sample bill of materials are presented in Figure 2 and Table 2.

Option 1 Equipment Required

This option provides both audio and video information (text appearing on-screen at a location that does not interfere with closed-caption messaging) across all channels on the cable system. Deaf subscribers are alerted by the video information on every channel, and the blind are alerted by audio on every channel, thus satisfying the requirements of the Americans with Disabilities Act. The FCC does not require cable systems to alert subscribers whose television sets are not turned on.

Option 1 requires that the EAS receiver/decoder drive a character generator, and combine both outputs in an I.F. controller/modulator. The I.F. controller in turn feeds an I.F. signal carrying the audio and video messages into each modulator and processor in the headend. When an emergency or test message is received, the I.F. controller activates the I.F. switching modules on each modulator/processor, and overrides the regular programming until the End of Message code is received. Normal programming is then resumed. A printer is also required, to log all emergency and test messages. (See Figure 1 and Table 1)

Cable systems with IF switching already installed for every channel (e.g., Scientific-Atlanta models 6340, 9270, or 9280) may find this option cost-effective. While the installation requires direct input into each channel's I.F. port and is therefore somewhat labor-intensive, larger cable systems serving many deaf subscribers may realize cost savings over Option 2.

Total cost to upgrade an I.F.-ready headend is estimated at $5900-$8700. Additional costs to add I.F. switching capabilities may run $130 to $155 per channel, depending on manufacturer and model.

Option 2 Equipment Required

Option 2 provides audio override with video interrupt (displacement of the picture with black, blank or flashing screen for short periods) across all channels, with audio and video override on one channel. Under Option 2, an equivalent alerting function must be provided to deaf and hard-of-hearing subscribers throughout the system. This requirement can be satisfied through separate in-home devices that activate strobe lights, bed-shakers, etc., and may also carry audio alerts, voice warnings, and visual text messages.[3]

Equipment necessary to provide Option 2 functionality is somewhat simpler, since it is installed after the combining network, and does not require separate inputs to each processor and

modulator on the system. (See Figure 2 and Table 2) The EAS receiver/decoder drives a character generator whose output feeds a modulator for the designated audio/video channel. Combined with an audio input from the EAS decoder, the modulator's output feeds a comb generator that also takes inputs from the combining network, and control and audio inputs from the EAS decoder. The R.F. signal from the comb generator feeds the distribution system. A separate, 52Mhz carrier from the EAS decoder delivers the same emergency messaging to activate in-home devices for the deaf. A printer is also required in Option 2, to log emergency and test messages.

Option 2 will appeal to cable operators whose headends are not already equipped with I.F. input and switching modules, and to those who estimate a relatively small number of deaf subscribers on their systems. In-home devices to support the deaf community may cost $65-$95 each, depending on final determinations by the FCC on what features will be required (e.g., simple contact closures to activate strobe, vs. LCD readout to deliver complete emergency message on the device). Headend costs for Option 2 are estimated at $5685-$9840.

The EAS Receiver/Decoder

Several manufacturers (including TFT and Idea/onics) are developing equipment solutions for EAS compliance. For simplicity's sake, this paper presents the MIP-921 (Multiple Input Processor) developed by HollyAnne Corp., as it combines in one unit many functions that must otherwise be accomplished in several pieces of equipment. Any EAS receiver/decoder must perform the following functions, by FCC requirement:

1. Capable of using the EAS protocol to send and receive EAS alerts.
2. Certified in accordance with Part 2 of the Commission's Rules, 47 C.F.R. Part 2.
3. Automatic override for national (Presidential) messages
4. Means to decode EAS messages either automatically or manually
5. Audio inputs for two EAS monitoring assignments, and one data input to receive another transmission mode
6. Means to store at least two minutes of audio or text messages and at least 10 preselected message codes
7. Ability to display any valid EAS message codes to show the originator, event, location, valid time period of the message and the local time the message was transmitted. Capability selectively to receive originator, event and location codes
8. Security measures to ensure that there will be no unauthorized personnel changing preselected codes
9. Programmable so that operators can select certain message codes in advance; cable management will determine which message codes in

their decoder will automatically interrupt programming for emergencies affecting their audience, including setting priorities for state and local area emergencies. All decoders must be programmed for EAS national level emergencies and required tests.

10. Must allow for relaying EAS alerts to narrowly targeted audiences; must have a display that will show who originated the message, the event or reason for the message, location of the event, and the valid time period of the event in local time.[4]

Test and Operation Requirements

The FCC requires that weekly tests of the EAS system be conducted, although three tests per month may be "unobtrusive", or silent tests, with no interruption of regular programming.

However, one test per month must be conducted on-air, and these tests will involve the following:

1. Transmission of the digital codes, transmission of at least 8 seconds of the attention signal, test audio script and EOM code.

2. All AM, FM, and TV stations and cable systems within the prescribed test area, as defined by the State Emergency Communications Committee (SECC), must transmit the test within the same 15 minute period.

3. Unattended broadcast stations and cable systems must have a record

available that shows EAS test and alert transmissions.

4. Tests in odd numbered months should occur between 8:30 am and local sunset. Tests in even numbered months should occur at times other than between 8:30 am and sunset.

5. Tests will originate from key EAS sources identified in the state plan.

6. The test schedule and script content will be developed by the SECCs and the Local Emergency Communications Committees (LECCs) in cooperation with affected stations and cable systems, the National Weather Service, and emergency management officials.[5]

It is clearly in the best interest of cable operators to become directly involved in local and state committees, as the scheduling of disruptive tests will otherwise be determined without consideration for the concerns of cable operations.

The FCC "expect(s) these committees to reorganize to include cable systems ...to hold elections for positions, to organize training, and to approve the policies and procedures for EAS operations, tests and activations within their domain. We anticipate that each SECC will have a Broadcast co-chair and Cable co-chair to ensure that their industries are fully participating in the development of state emergency plans."[6]

Unclear and Undetermined Issues

While the FCC was very thorough in its deliberation process and explication of the new EAS requirements in the Report and Order, a number of issues are still subject to interpretation; still others are unresolved at this writing, awaiting comments and reply comments on the Further Notice of Proposed Rule Making.

One of the issues cable operators will seek clarification on, is the provision of in-home alerting devices for deaf subscribers. Is a cable operator obligated to provide such devices to homes where only one of several residents is deaf or hard of hearing (a deaf child of hearing parents, for example)? What is the minimum level of functionality required for such a device?

The Further Notice of Proposed Rule Making asked for comments on the economic impact of EAS compliance on small cable systems, and the possibility of waivers or exemptions for those systems, and the size requirements for systems to qualify for such treatment.

The FNPR also seeks comment on whether the FCC should preempt application of conflicting requirements of local franchising authorities, should they pose any threat to the federal objective of maintaining EAS nationwide alerting capability.[7]

While the FCC mandated participation in the new EAS by broadcasting and cable, they have encouraged the voluntary participation of video dialtone providers, DBS, MMDS, telephone and cellular carriers, and other service providers. The FNPR also seeks comments on whether any or all of these services should be required to participate, as well.

Conclusion

While cable compliance with the new EAS may generate economic hardships for very small cable systems, the equipment required to satisfy the FCC rules is not terribly cumbersome, and will generally be available for well under $10,000 per head end. The new EAS undeniably adds the benefits of reliably and automatically alerting the public of emergencies, and does indeed satisfy the national objective of serving the public interest. Cable operators who can embrace implementation of this new system will have the opportunity to tell an important story in their communities about providing a service with the potential to save lives and property.

Grothendick and Michele Dionne of ANTEC, and Ken Cannon of Scientific-Atlanta, for their contributions to this paper.

---

[1] FCC 94-288, Report and Order and Further Notice of Proposed Rule Making, paragraph 5

[2] Where franchise agreements dictate local alerting, the national alerting requirements of the FCC do not supersede franchise authorities; local alerting must be continued in accordance with franchise agreements.

[3] id., paragraphs 61-62; also footnote 69, re. currently available devices in comments of Safety Alert Monitor, November 12, 1993.

[4] id., paragraphs 87 through 94.

[5] id., paragraphs 107 through 112.

[6] id., paragraph 132.

[7] id., paragraph 153, Section A of Further Notice of Proposed Rule Making.

RS 232

RJ11

AM/ FM/ WB

Audio

**MIP 921
EAS Receiver/Decoder**

Data

**Character
Generator**

To Printer

audio
out

910 D
interface
control
out

Emergency
Video

I.F. Controller/ Modulator

To I.F. Switching
Modules

I.F. out to 8-way
splitters
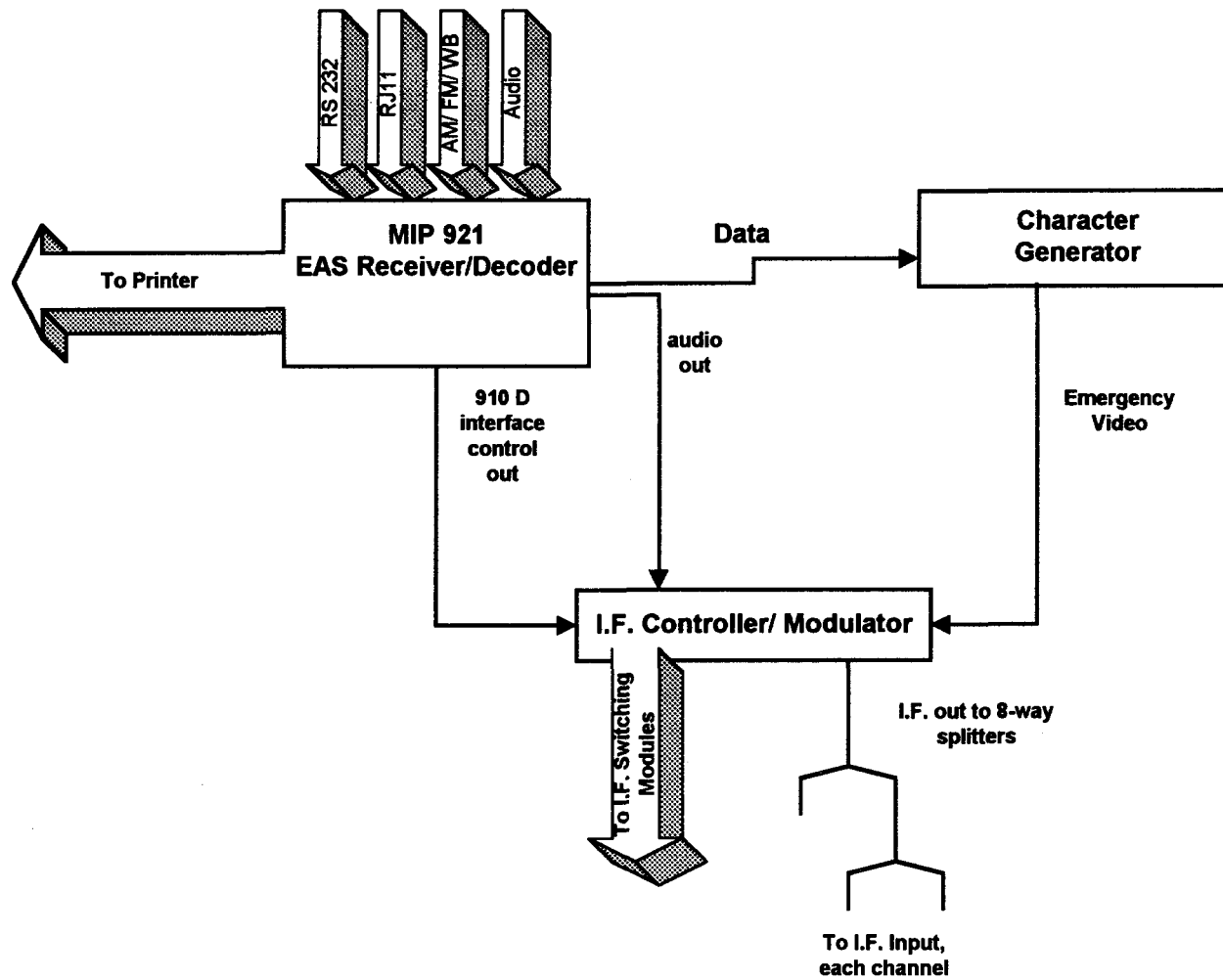
To I.F. Input,
each channel

Figure 1

Option 1: Audio/Video Override on All Channels

OPTION 1: EAS EQUIPMENT REQUIREMENTS

Audio/Video override on all channels

Equipment Description	Quantity	Approx. Price
EAS Multiple Input Processor, receiver and decoder, with AM/FM and WB receivers	1	$1500- $4500*
Event/Status Printer	1	$150-$300
Character Generator	1	$700-$800
I.F. Controller/Modulator	1	$3500-$3800
High Level I.F. Switching Option **	1/channel	$130-$155 per channel
Highly-shielded 8-way splitters, in series	1/ 7 channels	$50- $100
Total (I.F.-ready headend)		$5900- $9500

* High end units may include character generator

** I.F. input switch must be installed in modulators and processors to deploy Option 1. Some models may be upgraded with external switches, but consult with headend equipment manufacturer for details.
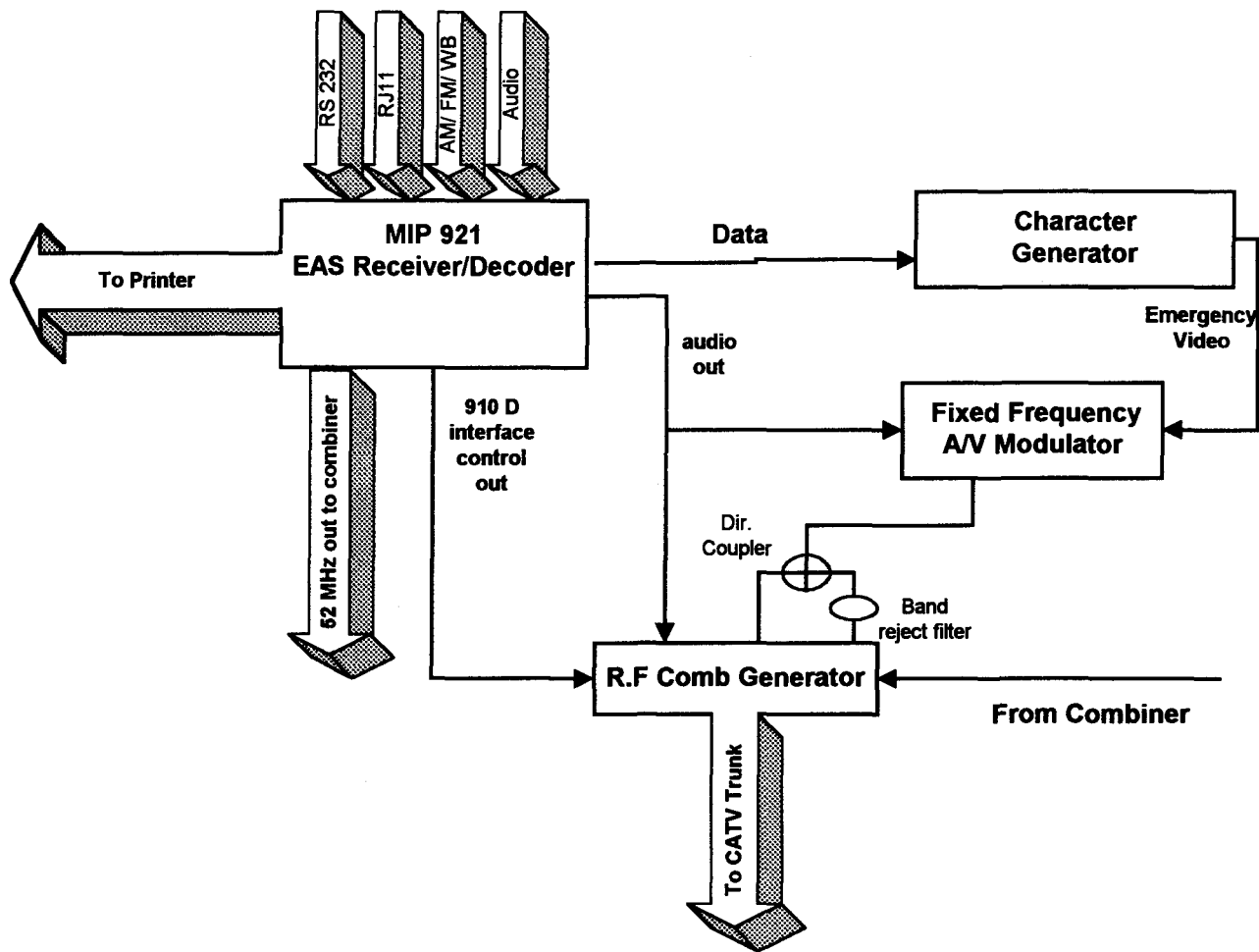
Table 1

RS 232

RJ11

AM/ FM/ WB

Audio

MIP 921
EAS Receiver/Decoder

To Printer

Data

Character
Generator

Emergency
Video

audio
out

910 D
interface
control
out

52 MHz out to combiner

Fixed Frequency
A/V Modulator

Dir.
Coupler

Band
reject filter

R.F Comb Generator

From Combiner

To CATV Trunk

Figure 2

Option 2: All Channel Audio Override with Video Interrupt

OPTION 2: EAS EQUIPMENT REQUIREMENTS

All channel audio override with video interrupt

Equipment Description	Quantity	Approx. Price
EAS Multiple Input Processor, receiver and decoder	1	$1500- $4500*
Event/Status Printer	1	$150-$300
Character Generator	1	$700-$800
Low-cost fixed frequency audio/video modulator	1	$135-$340
R.F. FM audio comb generator	1	$3200-$4700
In-home alerting device for deaf subscribers	1/ deaf home	$65-$95 each
Total headend costs (excluding in-home devices)		$5685- $9840

* High end units may include character generator

Table 2