ANNEX 5B

HD Radio Emergency Alert System

The HD Radio system can provide important new and enhanced emergency alerting capability. This functionality can be added at low cost by any station that has implemented digital broadcasts using HD Radio technology. Due to the compatibility with EAS (see Annex 5C), this functionality may be potentially added at no additional cost to a station, if that station already complies with EAS requirements. Unlike analogue based AM/FM alerts, HD Radio alerts can provide rich visual and audible content. The HD Radio system can support emergency alerts in both medium wave and the VHF band.

HD Radio emergency alerting capability is compatible with Recommendation ITU-T X.1303 "Common Alerting Protocol (CAP)". It can transport and then convey to the user key information elements regarding the essence of the alert, as issued by using CAP, for concise and easy to comprehend introduction by audible and visual means. The compatibility with CAP allows HD Radio alerting to match a broad alerting ecosystem for creating a smooth and familiar user experience.

HD Radio emergency alerts, referred to as "Active Alerts", support the following content:

– Multi-lingual audio, provided simultaneously on stations supporting multicast (HD2/HD3) channels.

– Multi-lingual text.

– Images such as photos, maps and more.

– Alert parameters including alert "matter", locations, target audience and "seriousness".

In addition to these features added to the transmission stream, HD Radio receivers can support the following receiver alert-related features:

– "Wake-up" on alert which turns on the receiver upon receipt of an alert message.

– "Break-through" on alert which switches the multi-function device from non-receiver mode (i.e. MP3 player, etc.) to receiver mode, upon receipt of an alert message.

– Filtering notifications based on target locations, target audience and alert "matter".

– Language options.

– History log, alert reminders.

– Supporting people with visual or audible impairments by further enhancing or converting alert message elements.

HD Radio Active Alerts can support up to 380 bytes in the primary alert message. The system can transmit up to 374 text characters in an uncompressed format and more in a compressed format. This conforms to ISO/IEC 8859-1:1998 and ISO 639-3 requirements. Available formats include plain text, SAME, FIPS, and ZIP. The system allows adding more formats.

HD Radio stations can implement Active Alerts with the introduction of an "Alert Processor". The Alert Processor receives the alert content from government officials or other authorized sources, in any one of the practiced methods. It generates the primary alert message (i.e. core alert content), as well as accompanying audio and images. The alert message is sent from the Alert Processor to the HD Radio Exporter or, in the case of stations that have implemented other advanced services, the HD Radio Importer.

In the United States, most radio stations, as well as most HD Radio stations employ a single alert processor that supports both EAS and HD Radio Active Alerts. Therefore, implementing Active Alerts at these stations is as simple as properly configuring the alert processor.

Figure 1 below sets out the station configuration:

Figure 1

Station functional elements



The Active Alert messaging feature can include three independent elements. First, the HD Radio system can send text information to the receiver for display on the receiver screen. This text information is transmitted as part of the Station Information Service ("SIS") instead of as part of the regularly transmitted station information. Second, the system can send an audio alert over both the main HD1 channel as well as the multicasting (HD2/HD3) channels. This allows for simultaneous audible alerts in different languages. The alert audio replaces the station's regular audio programming. Third, the system can transmit images, maps or other data using the Advanced Application Services (AAS). By using three separate pathways for transmission of the different elements of the emergency alert, the HD Radio system ensures the transmission of the primary text alert message does not compete with other station services. The use of separate pathways also allows for scalable deployment solutions that match different configurations and capabilities of stations.

For stations operating with the correct equipment and configurations to support Active Alerts, the HD Radio system should support approximately 95% receiver detection of emergency messages for a single attempt and 99% for the second attempt, when the receiver operates within its HD Radio audio coverage area.

The alerting capability is an integral part of HD Radio audio and data services. Therefore, implementation of Active Alerts does not require any HD Radio system configuration preparation and does not require any dynamic configuration changes for broadcasting emergency alerts.