

Development of a disaster-response FM radio broadcasting system utilizing disaster and crisis management alerts

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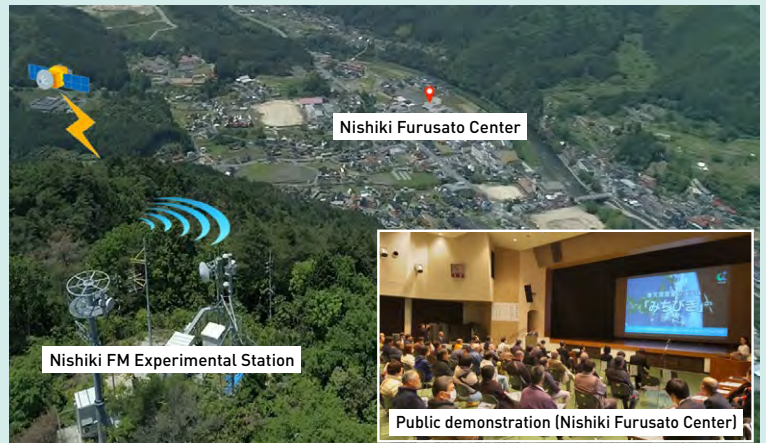
Case Overview

A broadcasting system was developed that utilizes the disaster and crisis management alert service of the QZSS "Michibiki" to enable uninterrupted automated transmission of disaster information, even when parts of the radio broadcasting network are disrupted during disasters or emergencies.

Key points regarding receiving the award (Comments from the selection committee)

The system is highly commendable for being the first in Japan to apply continuous crisis management information transmitted via the L1S signal of the QZSS "Michibiki" launched in 2018, to terrestrial radio broadcasting. By establishing a disaster-response FM radio broadcasting system, it enables the delivery of critical information even when network disruptions occur during disasters.

It represents an excellent example of space utilization by local radio and is expected to be applicable in other regions and countries.



Scenes from the public demonstration

Concrete Results

1. Contribution to creating new areas for space development and utilization

This initiative represents the first application in Japan of the QZSS "Michibiki" disaster and crisis management alert service to terrestrial broadcasting, achieving commercialization in 2025. FM radio enables wide dissemination of voice-based information and is highly accessible to the public, with receivers commonly available in everyday settings such as vehicles, making it an effective medium for obtaining information during disasters. By utilizing this technology, even in large-scale disasters such as a potential Nankai Trough Earthquake, where terrestrial infrastructure may be severely damaged, critical information can continue to be delivered via FM radio, contributing to public safety.

During disasters, broadcasters play a vital role in delivering real-time information. This demonstration established a system that delivers disaster information from the QZSS "Michibiki" through radio using the voices of local announcers, enabling continuous information dissemination without interruption, even in emergencies.

2. Contribution to expanding the space development and utilization market

As broadcasters have a mission to deliver reliable local information in real time, both in everyday life and during disasters or emergencies, this approach is expected to be adopted as a new broadcasting model by broadcasting stations nationwide.

3. Contribution to the advancement of the economy and society

During the Noto Peninsula Earthquake on 1 January 2024, some broadcasters experienced interruptions when relay lines from parent stations were severed. The disaster-response FM radio broadcasting system has established a method for maintaining broadcasts under similar disaster conditions.

This system can also be applied to temporary emergency broadcasting stations established during disasters and to community FM stations used by local governments to deliver regional information. Community broadcasting was institutionalized in January 1992 to provide locally focused information. The number of operators has steadily increased, with rapid growth from 1996 to 1998 following major disasters, and as of November 2025, 342 stations operate across all 47 prefectures, with disaster information as a primary mission. By utilizing this

system for community broadcasting, emergency alerts from Michibiki can continue even during unmanned hours, particularly at night and early in the morning, directly contributing to the safety and security of local residents.

4. Contribution to technology

Since 2018, Michibiki has continuously transmitted disaster and crisis management information, including tsunami alerts, via the L1S signal. Utilizing this L1S signal enables rapid delivery of disaster information even in areas with weak communications infrastructure, such as mountainous regions, or in situations where communication has been cut off due to damage to ground infrastructure. Yamaguchi Broadcasting therefore researched a system that allows FM transmission sites to directly receive and broadcast L1S signals.

Through continued research, the company successfully commercialized the disaster-response FM radio broadcasting system using QZSS "Michibiki," marking the first application of this approach in terrestrial broadcasting and enabling reliable delivery of disaster information to local residents.

5. Contribution to promoting public understanding and human resource development

The public demonstration simulated multiple warnings and cancellations, including a heavy rain emergency warning in the Nishiki FM experimental area and a flood warning for the nearby Nishiki River. Local residents participated in an evacuation drill in Nishiki-cho, Iwakuni City, and a test transmission from "Michibiki" was conducted with the cooperation of the Cabinet Office.

At the Nishiki FM Experimental Station, under a simulated outage of the main FM transmitter in Hofu City, Yamaguchi Prefecture, disaster and crisis management alerts from "Michibiki" were received and automatically broadcast via an FM relay system using the company's announcers' voices. Approximately 90 participants, including local residents and Iwakuni City disaster prevention officials, attended and monitored the broadcast. The public demonstration was broadcast live on a Yamaguchi Broadcasting radio program and featured on television in evening news broadcasts and the following day's information programs.

Post-demonstration surveys indicated a highly positive response to voice-based disaster information delivery, with approximately half of respondents reporting that they regularly listen to radio.

