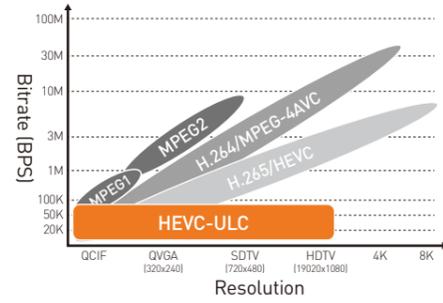


HEVC-ULC®

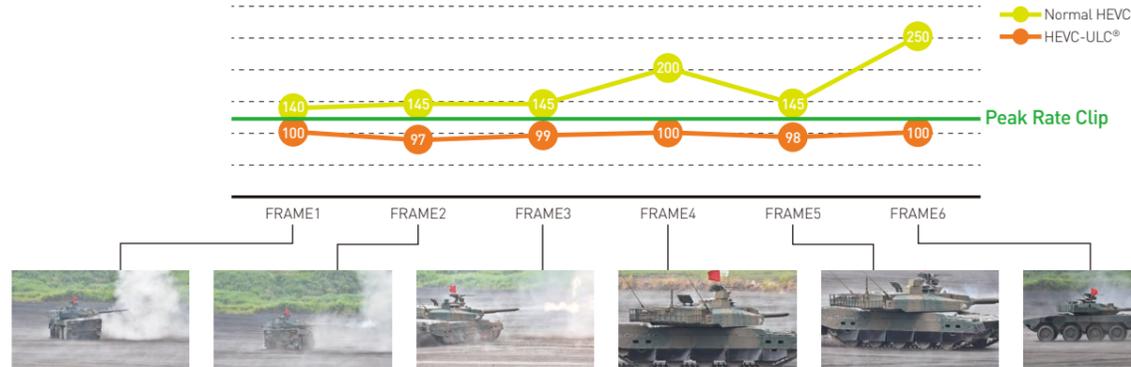
HEVC-ULC® (Ultra Low-rate video Codec) is our proprietary video codec technology at the core of ULC. It was developed with the aim of overcoming the limitations of sending high quality video data in bandwidth constrained and unstable networks. By optimizing video transmission at a rate of 60% bandwidth reduction on H.264 and controlling the peak of bandwidth fluctuations we can achieve stable video at data rates of less than 100kbps.



Peak Rate Control

HEVC-ULC® exercises peak rate control by fixing the upper bit rate limit and clipping the peak rate of the video transmission so the limitations of the network are not exceeded. Through this technology it is possible to send video over the network without experiencing drops in video quality. High quality video transmission can be achieved in 3G, LTE, NB-IoT and satellite networks such as Inmarsat BGAN by using HEVC-ULC® optimized video at a data rates of under 100kbps.

Normal HEVC vs HEVC-ULC®



RoI (Region of Interest)

The RoI feature enhances the picture in the selected region, sharpening it to a clear image quality whilst still maintaining bandwidth at under 100kbps. This area can be selected during operation with either KVM or touchscreen controls.



Still Image Mode

Still image transition mode is a feature that sharpens the image in a focused area to a higher picture quality by transitioning from video to a still image. The RoI area gradually improves, which can then be expanded to the remainder of the display.



Real time video over bandwidth constrained networks

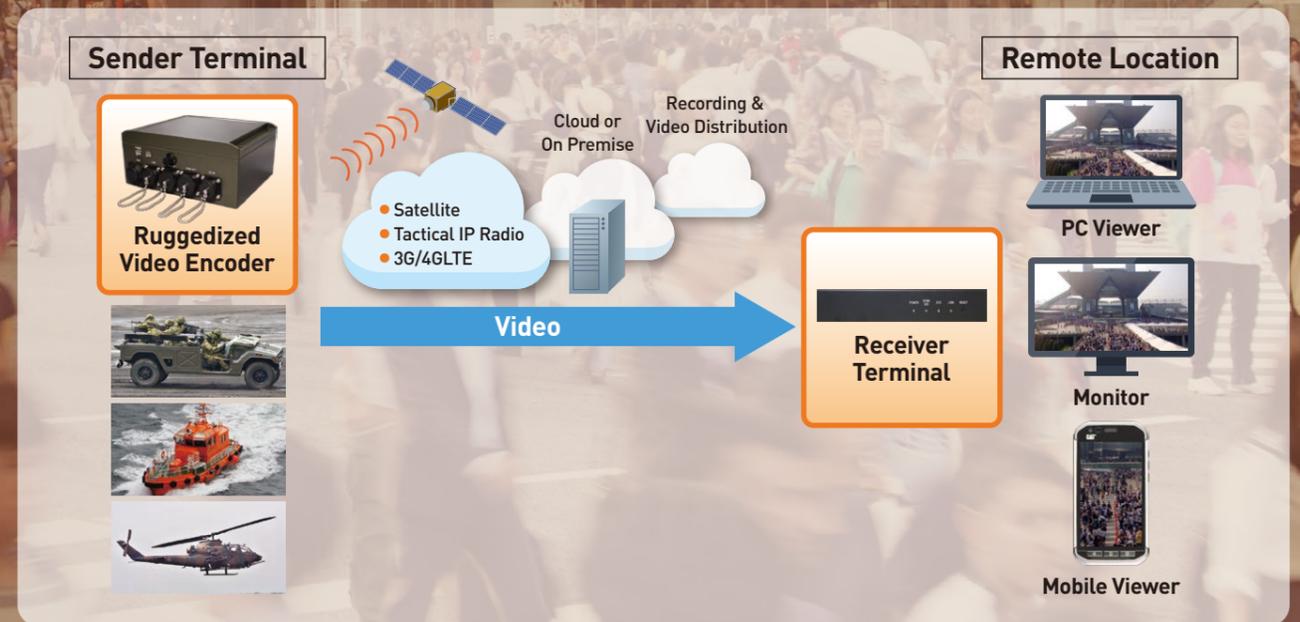
Video Transmission Solution for Satellite and IP Radio



Due to the limitations of communications infrastructure there are still many challenges in delivering video over wireless networks in locations worldwide.

- Satellite links have expensive data costs
- Poor video transmission quality when using mobile network
- Network latency and bandwidth congestion
- Lack of 3G/4G/LTE coverage worldwide
- Limited available bandwidth on military and tactical IP radio networks

ULC is designed to overcome these limitations. Powered by HEVC-ULC®, a codec we developed to transmit high quality real-time video over bandwidth constrained and unstable networks, it manages extreme fluctuations in bandwidth and spikes in latency to distribute video images stably in real time. So even in environments where fixed lines cannot be used, such as during military or disaster relief operations, it is possible to rapidly construct a mobile video transmission network using 3G/4G/LTE/IP radio or satellite links.



Applications

Video transmission from marine locations

In marine and coastal locations video can be transmitted over narrowband satcom networks with minimal latency. So operators in the field from the Coast Guard can maintain situational awareness even during critical operations like search and rescue missions.



When mainstream networks are down

Even when mainstream networks are down due to natural disasters or the like, it is possible to transmit high-quality video using methods such as satellite and dedicated radio.



In depopulated areas that only have 3G access

High-quality video transmission is possible using narrowband lines even in depopulated areas where the only access is via 3G, such as remote mountainous and marine locations



Vehicle mounted video transmission

Stable unbroken video can be transmitted from vehicle mounted camera sources whilst on the move.

Video transmission over satellite

HEVC-ULC®'s peak rate control feature allows video to be transmitted stably over satellite networks; free from both block noise and jitter issues. Codecs that use auto rate control suffer under the variable network conditions due to latency in the back channel. By the time the codec has adjusted, the available bandwidth had already changed leading to broken video feeds at mission critical moments. HEVC-ULC® uses peak rate control to fix the bandwidth parameters and buffers the packets, this protects against the extreme bandwidth fluctuations found in satellite environments.



Multi-point distribution

ULC supports multiple distribution methods including P2P (peer to peer), streaming via web server to multiple viewers, and conference distribution between three locations. Additionally, by using our VMS system; multipoint distribution, recording and image recognition are possible either via cloud or on-premise.

Packet level security

ULC uses KCipher-2, a high-speed packet level encryption cipher which can process 7 to 10 times higher than AES based algorithms. It follows the international standard, ISO / IEC 18033-4 and is recommended by the Ministry of Internal Affairs (MIC) and Communications and the Ministry of Economy, Trade and Industry (METI) in Japan. Other encryption ciphers can also be implemented to comply with national requirements.



Real-time wireless video transmission

HEVC-ULC® constantly monitors bandwidth fluctuations from the source image and feeds it back to the encoder in real time. The codec then works with this information to perform strict peak bandwidth control and image optimization without exceeding the specified bandwidth. This technology allows for stable, high-quality video communication even in severely limited wireless networks such as over satellite or dedicated military frequencies.