

Next Generation Television & Broadcasting Promotion Forum  
SKY Perfect JSAT Corporation

Live Screen in Ultra-HD (4K) of ALICE Concert Tour 2013  
“It's a Time” Final at NIPPON BUDOKAN

Next Generation Television & Broadcasting Promotion Forum (Head Office: Minato-ku, Tokyo; President: Osamu Sudo; hereinafter referred to as “NexTV-F”) and SKY Perfect JSAT Corporation (Head Office: Minato-ku, Tokyo; Representative Director, President & Chief Executive Officer: Shinji Takada; hereinafter referred to as “SKY Perfect JSAT”) held a Ultra-HD(4K) live screen via satellite transmission of the finale of the ALICE Concert Tour 2013 “It's a Time” that was staged at NIPPON BUDOKAN (Chiyoda-ku, Tokyo) on November 2, 2013 (Saturday).

The event was jointly held by NexTV-F and SKY Perfect JSAT at Cinema Mediage Odaiba (Minato-ku, Tokyo) and was attended by relevant parties and various media outlets. The concert at NIPPON BUDOKAN was transmitted to Cinema Mediage Odaiba via SKY Perfect JSAT satellite and screened as a live event. The program was recorded in Ultra-HD(4K) resolution at the same time. Seven 4K cameras were used to deliver stunning images of the concert. A large screen for movies was used to ensure realistic reproduction of the concert.

Ultra-HD(4K), which consists of high-resolution images that boast approximately four times the pixel-count of full high definition (HD), has been in the spotlight as the way forward in broadcasting service. Preparations are currently underway to proliferate Ultra-HD(4K) resolution going forward, led by NexTV-F.

Transmissions using satellite enable links requiring high-speed transmission such as real-time 4K resolution from anywhere, including an in-vehicle earth station, as well as ultra-fast, simultaneous delivery of high-capacity files to numerous locations. This provides an excellent solution for markets demanding instantaneous high image quality such as public viewing of sports and other events as well as those demanding simultaneous broadcasting that includes content delivery.

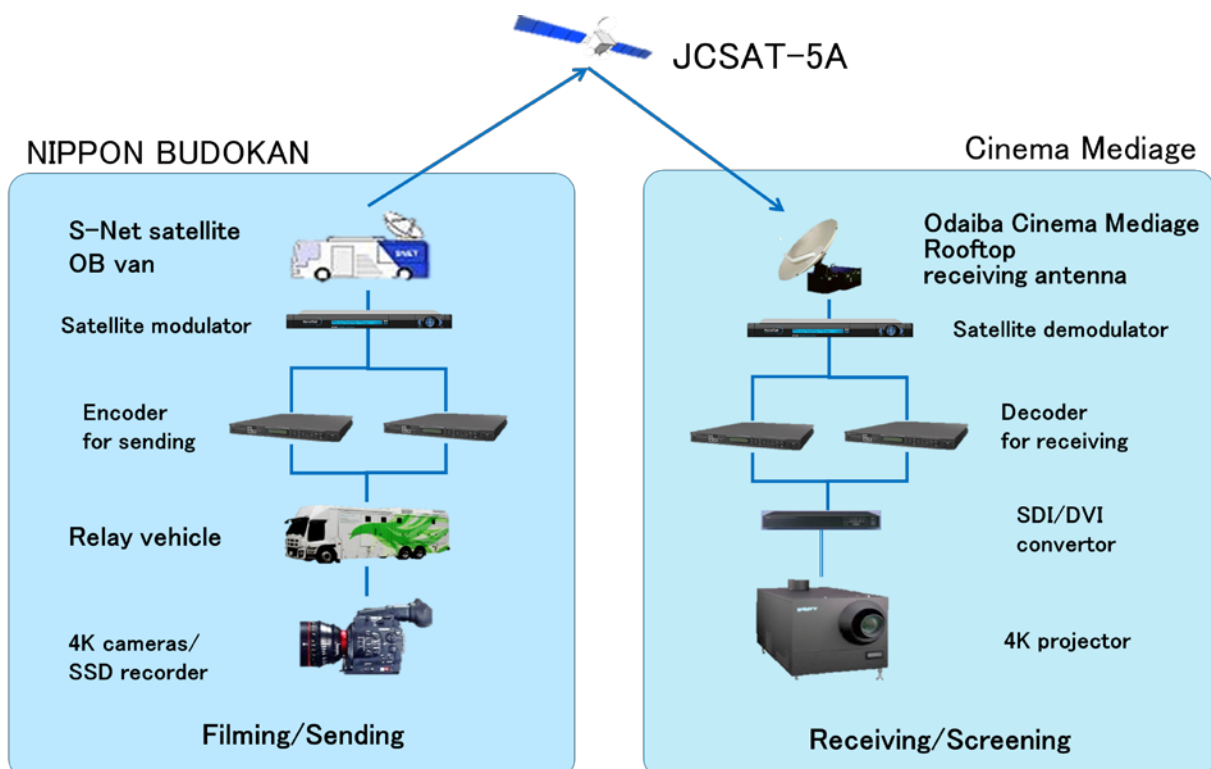
NexTV-F was established on May 2 this year with participation from various fields that include broadcasters, terminal manufacturers and telecommunication carriers with the aim of investigating technical standards to drive the swift realization of next-generation broadcasting service, led by Ultra-HD(4K/8K) TV and smart TV, as well as world-leading experimental broadcasting.

SKY Perfect JSAT has already delivered live broadcasts of two J-League soccer games as an experiment in Ultra-HD(4K) transmission using a telecommunication satellite. Going forward, we will vigorously develop Ultra-HD(4K) broadcasting technology and propose solutions that meet the needs of the viewing audience.

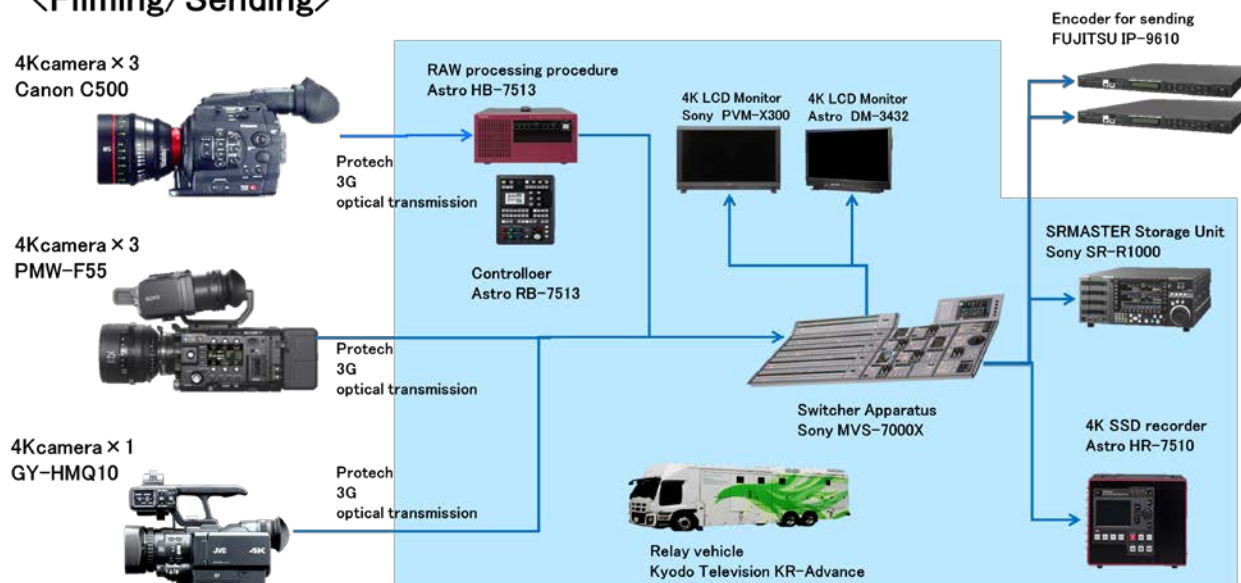
## <For reference>

- Outline of the experiment
- Date of the experiment  
November 2, 2013 15:00–19:00
- Contents  
ALICE Concert Tour 2013 ~It's a Time~ FINAL in NIPPON BUDOKAN
- Uplink  
NIPPON BUDOKAN, satellite OB van (Tiyoda-ku, Tokyo), 1.5 m antenna
- Downlink  
Odaiba Cinema Mediage (Daiba, Minato-ku, Tokyo), 1.4 m antenna
- Satellite  
JCSAT-5A satellite
- Frequency bandwidth  
35.8 MHz
- Modulation scheme/FEC rate  
32 APSK, FEC 3/4
- Information Rate  
Up to 123 Mbps
- Video compression/encoding method  
H.264 | MPEG-4 AVC
- Video resolution (horizontal × vertical)/scanning method  
3840 × 2160 / 59.94 p

## 【System configuration】



## <Filming/Sending>



For this experiment, we enlisted cooperation from the following organizations.

### ■Cooperation in moving pictures

ALICE music association

### ■Cooperation in technology

Fuji Television Network, Inc.

### ■Filming devices

- Canon Inc.  
EOS-C500 Digital cinema camera  
CN30-300 Cinema lens  
CN14.5-60 Cinema lens
- ASTRODESIGN, Inc.  
HB-7513, RB-7513 Real time RAW Developing Device, camera control unit  
HR-7510 4K SSD recorder  
DM-3432 4K 32-inch liquid crystal monitor
- Sony Corporation  
PMW-F55 Digital cinema camera  
PVM-X300 30-inch industrial-use 4K monitor  
SR-R1000 SRMASTER storage unit
- FUJIFILM Corporation  
HK4.7x18 PL mount zoom lens
- JVC KENWOOD Corporation  
GY-HMQ10 Digital cinema camera
- NIHON VIDEO SYSTEM Co., Ltd.  
3G optical transmission device LS-750/LS-850
- Corporation TELECAM  
3G optical transmission device

- Kyodo Television Ltd.  
Relay vehicle KR-advance Sony MVS-7000X Multi-format switcher

■Transmission devices

<Sender's equipment>

- Fujitsu Limited  
IP-9610 Video transmission device (H.264 encoder)
- ASTRODESIGN, Inc.  
CX-5528A-F MPEG-2 TS multiplexer for relay transmission
- Rikei Corporation  
NS1000 Satellite modulator

<Receiver's equipment>

- Fujitsu Limited  
IP-9610 Video transmission device (H.264 decoder)
- ASTRODESIGN, Inc.  
SD-8203 4K-compatible HD-SDI/DVI converter
- Rikei Corporation  
NS2000 Satellite demodulator

■Satellite Relay Vehicle

- Satellite Network Inc,

■Screening Equipment

- Sony Corporation  
SRX-T420 Data projector