

SET eXPerience

Introduction of **advanced ISDB-T Equipment**
for Digital Terrestrial Television System

NEC Corporation

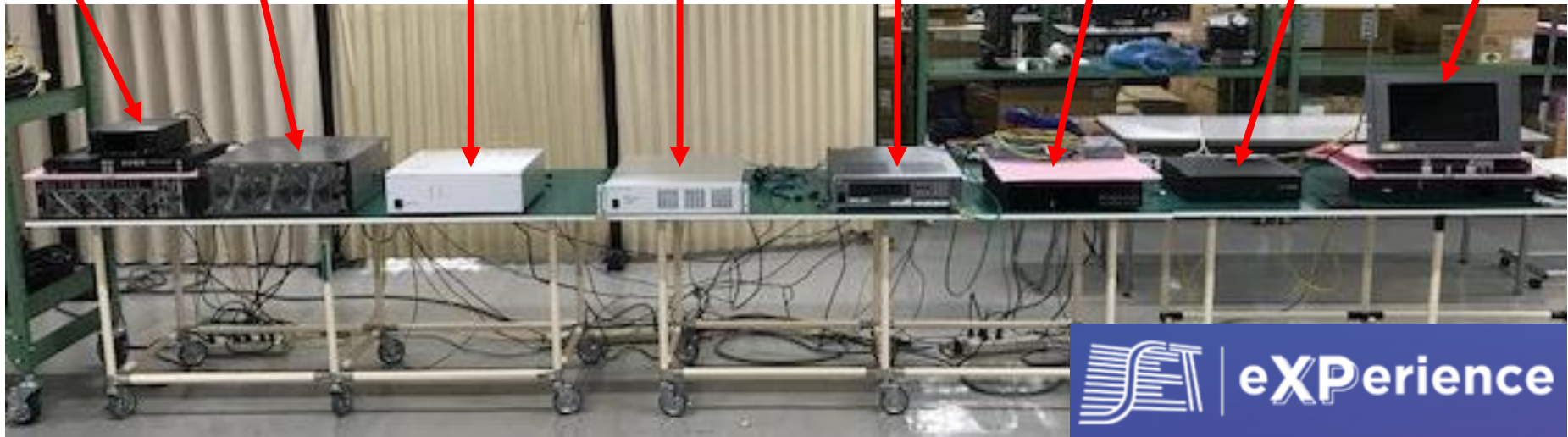
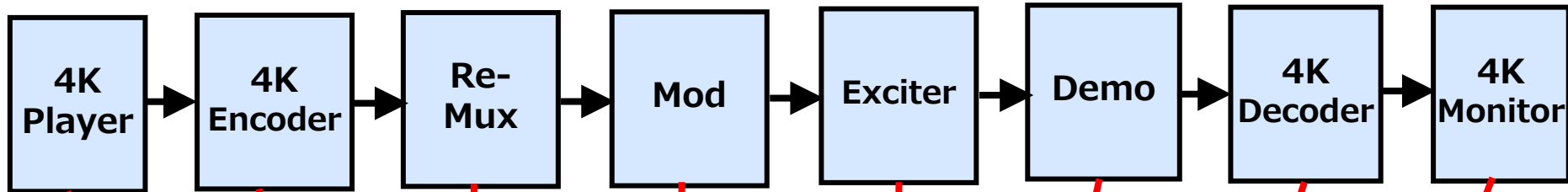
NEC is pleased to conduct trial transmission for the test to be applied for advanced ISDB-T digital terrestrial system in Brazil. NEC have prepared the following transmission and reception equipment for the test.

- HEVC MMT Encoder and Decoder**
- Advanced ISDB-T Re-Multiplexer**
- Advanced ISDB-T Modulator**
- Advanced ISDB-T Exciter**
- Advanced ISDB-T Demodulator**
- HEVC MMT/TLV 4K Decoder**



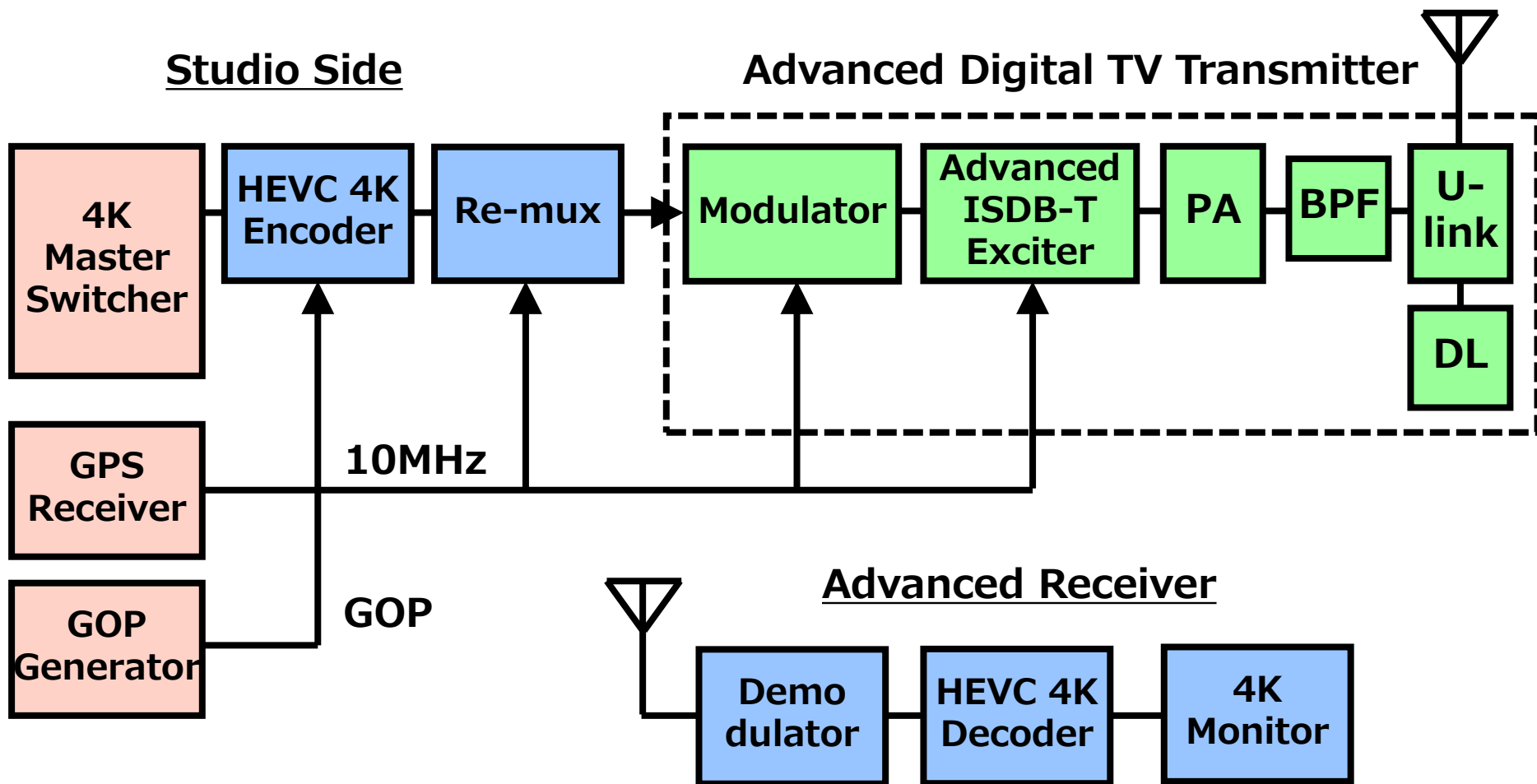
Test Block Diagram of advance ISDB-T System

Test block diagram of advanced ISDB-T digital terrestrial system is mentioned as follows.



Transmission Block Diagram of advance ISDB-T System

Transmission block diagram of advanced ISDB-T digital terrestrial system is mentioned as follows.



4K Encoder for Stationary service



YE-9300
Encoder



MF4200
Mounting Shelf (6slots)

- **Module type** : 4K and 2K H.265 MMT Encoder
- **Video Input** : 4K (2,160p) and 2K (1,080p and 1,080i)
- **Audio Input** : Embedded Audio, 32ch
- **Video Encoding** : H.265|HEVC Main10 Profile
- **Audio Encoding** : MPEG-4 AAC (ISO/IEC 14496-3)
- **4K Input** : 3G-SDI x 4 and 12G-SDI
- **Output** : MMT/IP and TS/ASI
- **Mounting Shelf** : Up to 6 boards in MF4200 Mounting Shelf

4K Decoder for Stationary service



YD-9300
Decoder



MF4200
Mounting Shelf (6slots)

- **Module type** : 4K and 2K H.265 MMT Decoder
- **Video Output** : 4K (2,160p) and 2K (1,080p and 1,080i)
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- **Input** : MMT/IP
- **4K Output** : 3G-SDI x 4 and 12G-SDI
- **Mounting Shelf** : Up to 6 boards in MF4200 Mounting Shelf

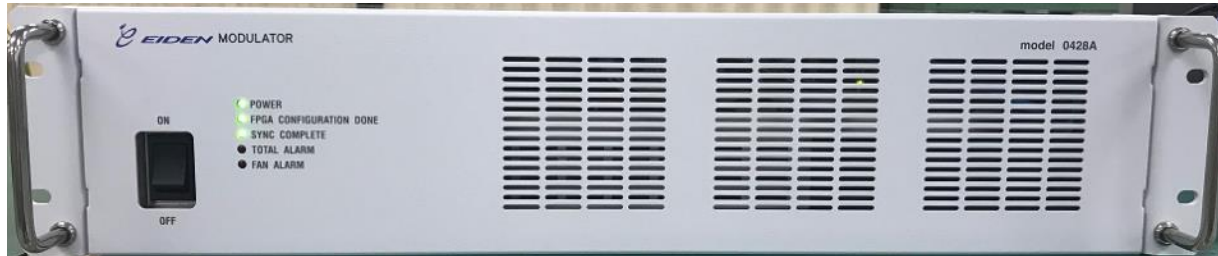
Advanced Re-Multiplexer for 35 Segment



0416A-003 by Eiden

- **IP Input** : **MMT or TLV packet input**
- **IP Output** : **Two XMI packets output to Modulator**
- **Reference** : **10MHz input and PTP from PTP SV for SFN**
- **Multiplexing** : **Definition of Layer-A, B, C and LLch-1**
: **Definition of NIT and AMT**
: **FEC Block process**
: **Frame process**
: **XMI packet process**

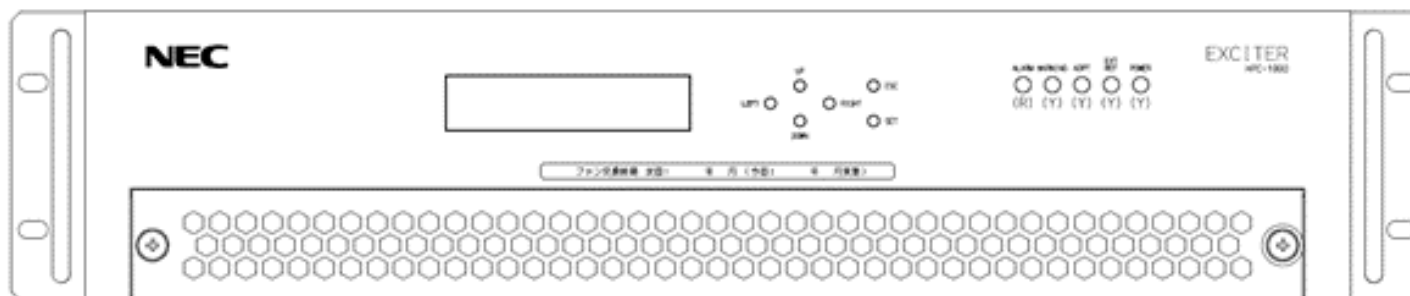
Advanced ISDB-T Modulator



0428A by Eiden

- **IP Input** : **XMI/IP input**
- **IF Output** : **H1, H2, V1 and V2**
- **Output Frequency** : **37.15MHz and 10dBm \pm 1dB/50ohm**
- **Modulation** : **LDPC and BCH Coding**
: **Time and Frequency Interleave**
: **OFDM Frame Structure (TMCC)**
: **Quadrature Modulation**
- **Reference** : **10MHz input**

Advanced ISDB-T Exciter



HPC-1990 by NEC

- **IF Input** : **OFDM modulation signal (37.15MHz)**
- **RF Output** : **OFDM modulation wave**
- **Center Frequency** : **US-30Ch(569M) + offset (1/7MHz: 569.143MHz)**
- **Band width** : **5.57MHz and 13 segment (H polarization)**
- **Reference** : **10MHz input**
- **SFN** : **Available**

Advanced ISDB-T Demodulator



by Socionext

- **RF Input** : **Ch.13 to Ch.52**
- **IF Input** : **37.15MHz**
- **IP Output** : **Two MMT/TLV outputs**
- **OFDM** : **Layer-A, B, C and LLch-1 system**
- **Reference** : **10MHz input**

Advanced MMT/TLV 4K Decoder



4K XJive MMT Player by Turbo Systems

- **Desktop type** : 4K H.265 TLV/MMT Decoder
- **Video Output** : 4K (3840 x 2160) / 59.94fps
- **Audio Output** : Embedded Audio, 16ch
- **Video Decoding** : H.265/HEVC Main 10 4:2:0
- **Audio Decoding** : 2ch / 5.1ch / 7.1ch AAC 16bit 48kHz
- **Input** : TLV/MMT signal
- **4K Output** : 3G-SDI x 4 and 12G-SDI

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