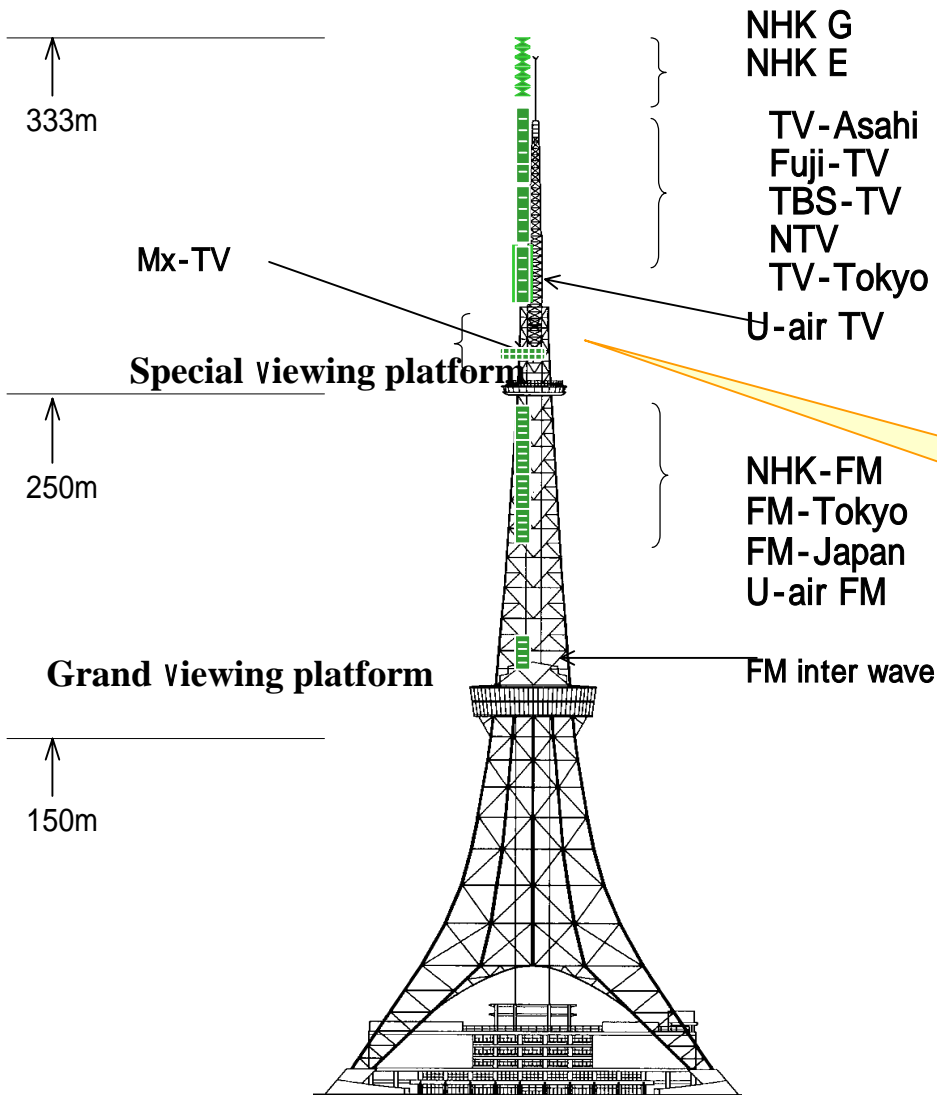


Digital TV Broadband Antenna Implemented on the Tokyo Tower

Kazuo KOGURE

The Furukawa Electric Co., Ltd.,

TV Broadcasting Antennas Installed on the Tokyo Tower



•A number of analogue TV broadcasting antennas are already installed on the Tokyo Tower, leaving only a limited space for mounting of digital broadcasting antennas

Digital TV antennas to be mounted here

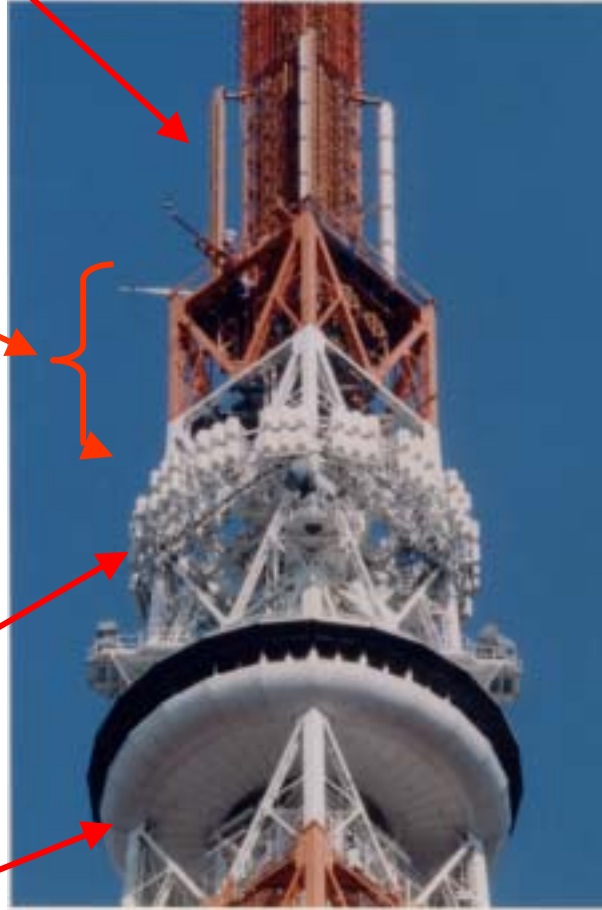
Mounting Space for Digital TV Antennas on the Tokyo Tower

U-air TV

Digital TV antennas to be mounted

Mx-TV

Special viewing platform



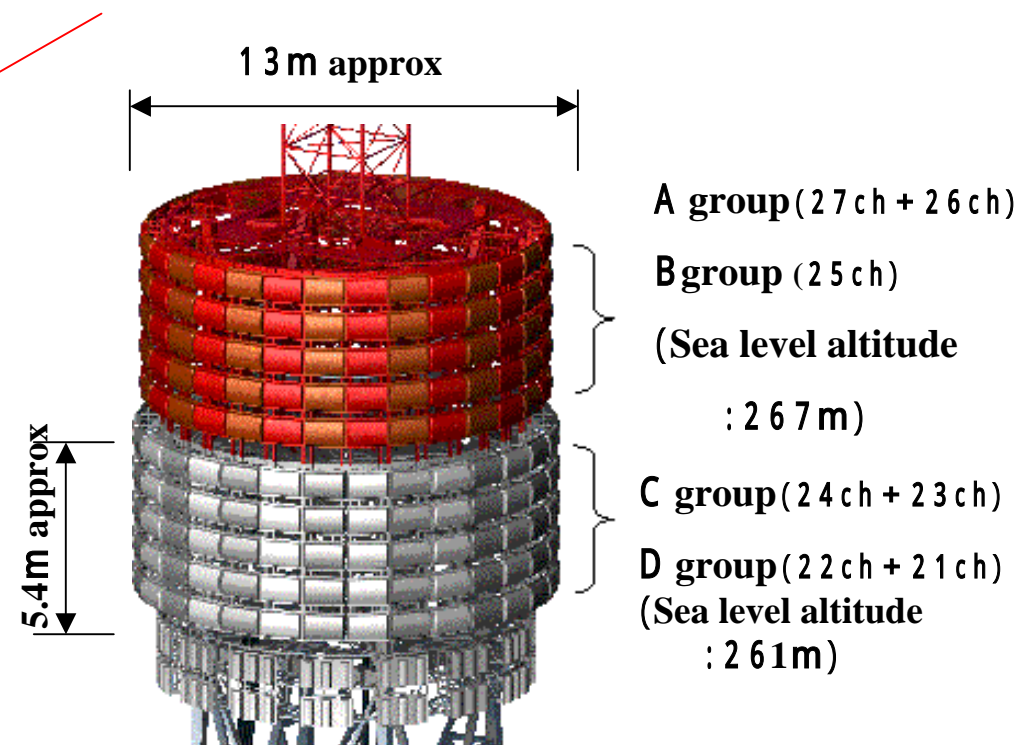
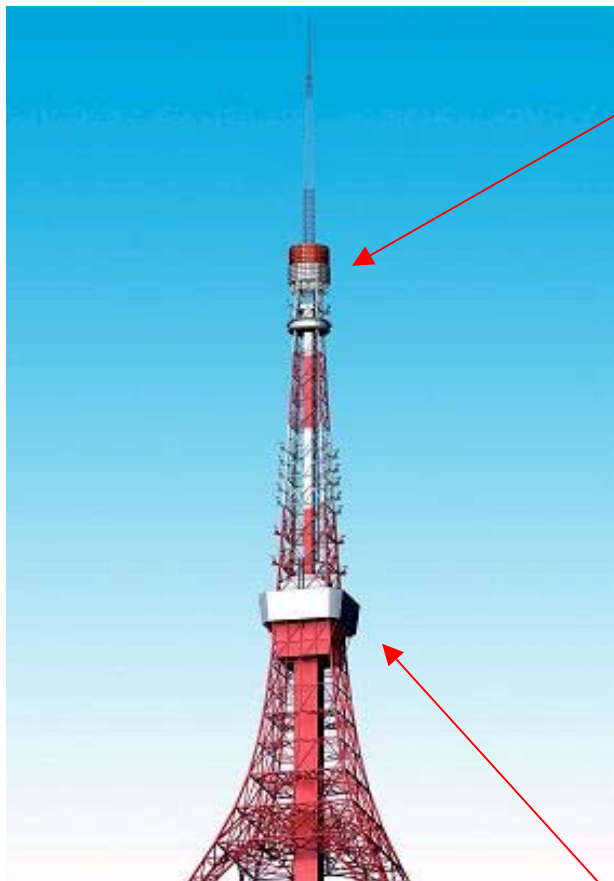
- The mounting space for the digital TV antennas is limited to a small space of 6 meters in width and 12 meters in height on the tower structure.
- A pattern synthesis technology is required to realize an omnidirectional radiation pattern using such a difficult space for mounting

Specifications for Digital TV Broadcasting Antenna for Tokyo Area

- **Type:** Five stacked, fifteen panel array; comprising 75 panels of 3-element, 2L stacked-loop antenna
- **Polarization:** Horizontal polarization
- **Directivity:** -4 dB or less in horizontal pattern dips
- **Gain:** 8 dB or more
- **VSWR:** 1.08 or less
- **Beam tilt:** 0 degree
- **Input port:** WX-152D coaxial connection

Digital TV Broadcasting Antenna (Conceptual Design)

Transmitting Antenna



Transmitter Room

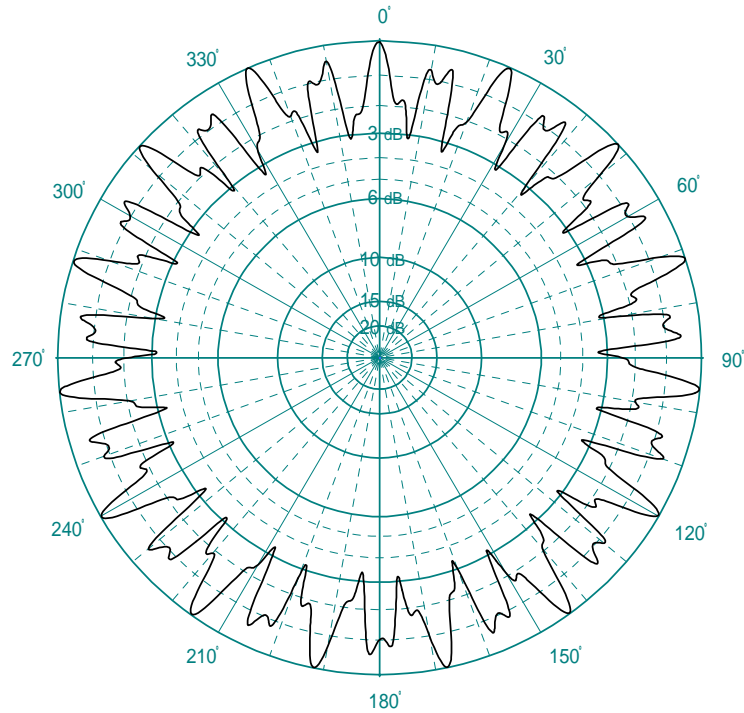
Digital TV Broadband Antenna on the Tokyo Tower



The antenna installation work was carried out during the period of **2002 to 2003**, and the renewed Tokyo Tower with digital TV broadcasting antennas came into being.

Horizontal Directivity

Calculated Horizontal Directivity



Measured Horizontal Directivity at 22 ch



- There was good agreement between the calculated and measured patterns, confirming the validity of the design.

Work during the night Hoisting of antenna panels



The installation work was carried out entirely during the night, taking due care to the tourists who visit the Tower.

Antenna Installation (III) Mounting of Antenna Panels



Mounting work under way



Top view