

(Press Release)



## 8K (Super Hi-Vision)

### Long-distance transmission test is successfully achieved

**TOKYO, February 3rd 2014-** NHK is conducting research and development on a large-capacity terrestrial transmission technology to realize 8K (Super Hi-Vision) (hereafter referred to as 8K) terrestrial broadcasting. On this occasion, a long-distance test transmission was successfully achieved.

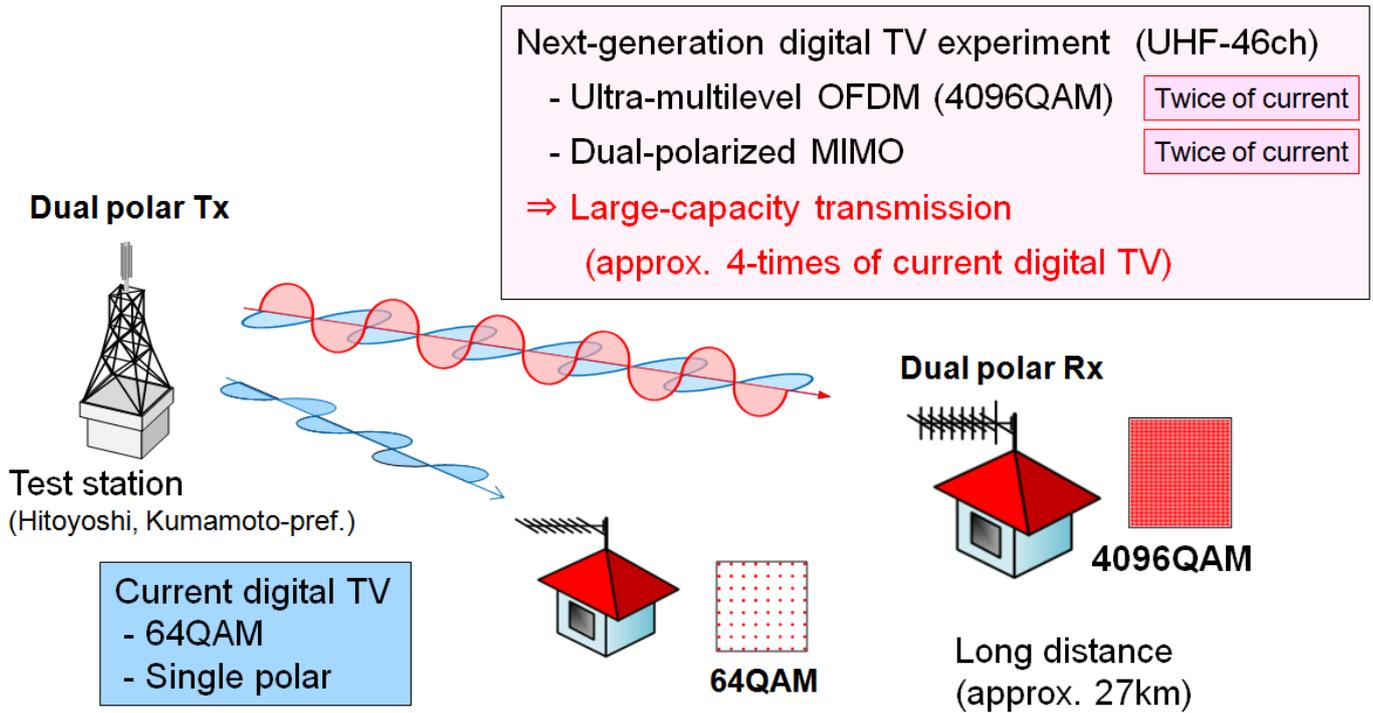
In the test, a compressed 8K signal was transmitted on a single UHF-band channel (6-MHz bandwidth), from a test station at NHK's Hitoyoshi TV relay station in Hitoyoshi City, Kumamoto Prefecture. It was confirmed that at this time NHK has managed to send the 8K signal to a receiving station 27 km away, the same distance that can be achieved by current terrestrial digital broadcasting.

In order to transmit the 8K signal, whose resolution is 16 times greater than current HDTV signal, it was essential to utilize new technologies that expand transmission capacity, such as ultra-multilevel OFDM (\*1), a method of encoding digital data on multiple carrier frequencies that is also used in Wi-Fi, and dual-polarized MIMO (\*2), a technique in which multiple antennas are used at the points of transmission and reception to enhance performance, in addition to image data compression technology.

In May 2012, NHK's Science & Technology Research Laboratories successfully completed the world's first terrestrial 8K test transmission over a distance of approximately 4.2 km. This test showed that 8K signals can be transmitted over even longer distances, demonstrating that it can be delivered to homes. In order to strive for the speedy realization of 8K terrestrial broadcasting, NHK plans to push on further with its research and development. NHK is carrying out this test with the support of the Ministry of Internal Affairs and Communications.

\*1) OFDM =Orthogonal Frequency Division Multiplexing

\*2) MIMO =Multiple-Input Multiple-Output



(Above) Comparison of the test and current terrestrial digital broadcasting

Table1: Test station specifications

Item	Specifications
Modulation Method	OFDM
Occupied Bandwidth	5.57 MHz
Transmission Frequency	671.142857 MHz (UHF 46ch)
Transmission Power	Horizontal polarization: 10 W Vertical polarization: 10 W
Carrier Modulation	BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM
FFT size	8k, 16k, 32k, 64k
Guard Interval	1/8, 1/16, 1/32
Error-correcting code	Inner code: LDPC, code rate $r=2/3, 3/4, 5/6$
	Outer code: BCH
Transmission station	Established at NHK Hitoyoshi TV relay station

Table2: Terrestrial 8K transmission test specifications

Item	Specifications
Transmission Capacity	91.8 Mbps (4096QAM, $r=3/4$ )
Video Coding	MPEG-4 AVC / H.264
Reception Station	Nousonkankyokaizen Center, Yunomae Town, Kumamoto Prefecture - approx. 27km from the transmission test station

(Reference-2/2)



Reception Point



Transmission antenna and the surrounding area



Reception point (left) and receiving equipment (right)