

# DEVELOPMENT OF A NEW VLBI SAMPLER UNIT DEDICATED TO e-VLBI FOR NEAR REAL-TIME MONITORING OF EARTH ROTATION

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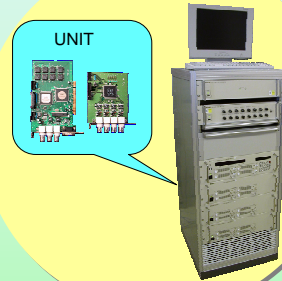
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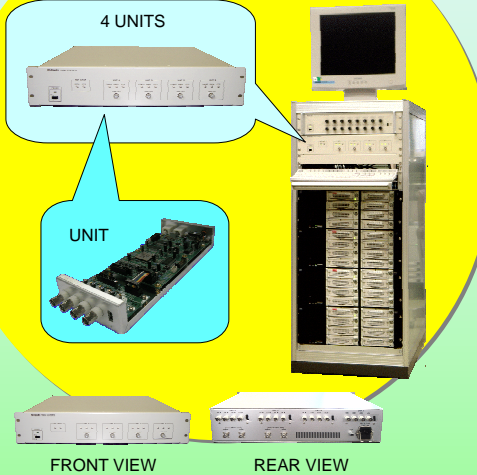
### Abstract

National Institute of Information and Communications Technology (NICT) has developed three models of VLBI samplers, ADS1000, ADS2000 and K5/VSSP, dedicated to near real-time VLBI observation (e-VLBI) through a high-speed network connection for monitoring earth orientation parameters. Among these three models, the K5/VSSP, which is designed to be a PCI bus board mountable on a general purpose PC, has broadened the base for VLBI users, i.e., any PC equipped with the K5/VSSP PCI-bus board can be a VLBI recorder, and the data transfer through the Internet is easily realized. With the advent of K5/VSSP the development of software correlator also greatly progressed. Recently we have developed a new VLBI sampler named K5/VSSP32 as a successor to the K5/VSSP. Maximum sampling frequency is increased up to 32MHz. When the number of quantization bit is limited to one, the sampling frequency of 64MHz is possible. Moreover USB 2.0 (Universal Serial Bus specification revision 2.0) is adopted as an interface to connect the sampler with a host PC. It is hence possible to use laptop (notebook) PCs for VLBI observations if it is desired. We report the results of some test observations using K5/VSSP32.

K5/VSSP System (16ch System)



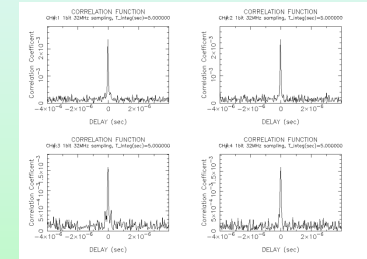
K5/VSSP32 System (16ch System)



### Fringe Test Results

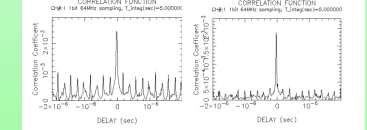
32MHz 1bit Sampling

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64MHz 1bit Sampling

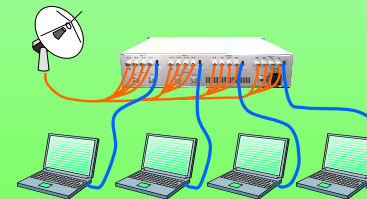
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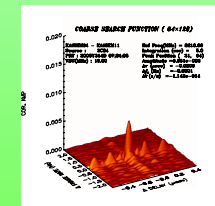
### Fringe Test



### VLBI with Laptop (Notebook) PCs



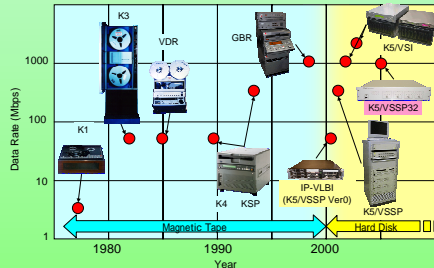
### Laptop (Notebook) PC First Fringe!!



### Summary

- We have developed the K5/VSSP32 sampler system equipped with a USB-2.0 interface for VLBI observation, which is a successor to the K5/VSSP system.
- Fringe test was successfully carried out.
- We will carry out a geodetic VLBI soon using K5/VSSP32.
- Price is 500,000Yen (about \$4,200) for a unit (4ch) without PC.
- K5/VSSP32 can be used for not only a VLBI observation but also a general purpose scientific observation which requires precise time labeling.

### History of VLBI Recorders at NICT



### Comparison of Specifications between K5/VSSP and K5/VSSP32

	K5/VSSP (IP-VLBI)	K5/VSSP32
Sampling Frequency (MHz)	0.04, 0.1, 0.2, 0.5, 1, 2, 4, 8, 16	0.04, 0.1, 0.2, 0.5, 1, 2, 4, 8, 16, 32, (64)
AD bits	1, 2, 4, 8	1, 2, 4, 8
# of ch/unit	4	4
Max Data Rate	64Mbps/ch 64Mbps/unit 256Mbps/4unit	64Mbps/ch 256Mbps/unit 1024Mbps/4unit
# of ch/unit	1ch, 4ch	1ch, 4ch
DC offset	N.A.	adjustable
Reference Signals	1PPS, 10MHz	1PPS, 10MHz/5MHz
Interface with PC	PCI-bus	USB2.0

