Look for a proper channel combination for bandwidth synthesis in constrained condition

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In geodetic VLBI, wide bandwidth of S-band and X-band is not perfectly recorded. Instead of this, channels which are extracted bins of full-bandwidth with video converter are synthesized with bandwidth-synthesis technique. The synthesized channels can realized more efficient observation. Combinations of channels are the best, when side-lobe level is small and variance of channel frequency is big. Thus, a geodetic solution can be obtained at high precision at this time. A combination of channels is normally calculated by minimum redundancy array method. This method is able to have a high precision solution at unconstrained condition. But due to actual conditions (e.g. observation bandwidth, a period of phase calibration signal, channel number and bandwidth of channel), it is hard to find minimum redundancy array combination for high-resolution result. Therefore, bandwidth synthesis simulation whose channels are randomly-distributed has been developed with Monte Carlo method. In constrained conditions, proper combinations can be successfully obtained with this simulation. Here, we will report about more detail of simulation and results.