

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY
HAYSTACK OBSERVATORY**

WESTFORD, MASSACHUSETTS 01886

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Telephone: 781-981-5400

Fax: 781-981-0590

To: UVLBI Group
From: Alan E.E. Rogers and Jason SooHoo
Subject: Set-up at CARMA March 2012

The EHT session at CARMA in March 2012 is shown in Figure 1. Antennas 2, 3, 4, 5, 8, 12, 13, 14 were combined in the beamformer and the phases sums for the high (IF0) and low (IF1) bands for RCP and LCP were recorded in MK5B format on 4 recorders. A separate “comparison” recording was made from antenna C1 with the 500 MHz wide high band (IF0) in LCP using a RDBE digitizer and polyphase filter board and Mk5C.

In this session a low phase noise Agilent 8257D synthesizer was installed to provide the reference for the Gunn oscillators of the 1st L.O. This synthesizer, on long term loan to CARMA, is now part of the array so that the change from normal array operation to VLBI avoids the recabling used in previous sessions. The performance of the new synthesizer which uses 10 MHz derived from H-maser 5 MHz via a Wenzel doubler, was compared with that of the old HP8662 synthesizer, used in previous VLBI sessions to provide the reference for one antenna of the array. No significant difference was seen in the fringe amplitudes at 1mm on baselines to this antenna when its reference was from the HP8662 compared with when its reference was from the Agilent 8257D common the other antennas in the array.

During the VLBI sessions some sample (VLBI0) correlations were made between the comparison antenna and phased Sun. The correlations indicated that under the best conditions the phasing efficiency was over 90% but unfortunately owing to the high opacity during much of the VLBI the phasing efficiency on average was closer to 70%. Another contributing factor was the wide spacing of the antennas in the configuration of the array. Given the high opacity and array configuration the phasing efficiency was probably about as high as could be expected. In the future a significant improvements could be made by using a data buffer so the current data could be phased prior to recording thereby avoiding the need to predict that phases from previous data.

The network configuration is shown in Figure 2.

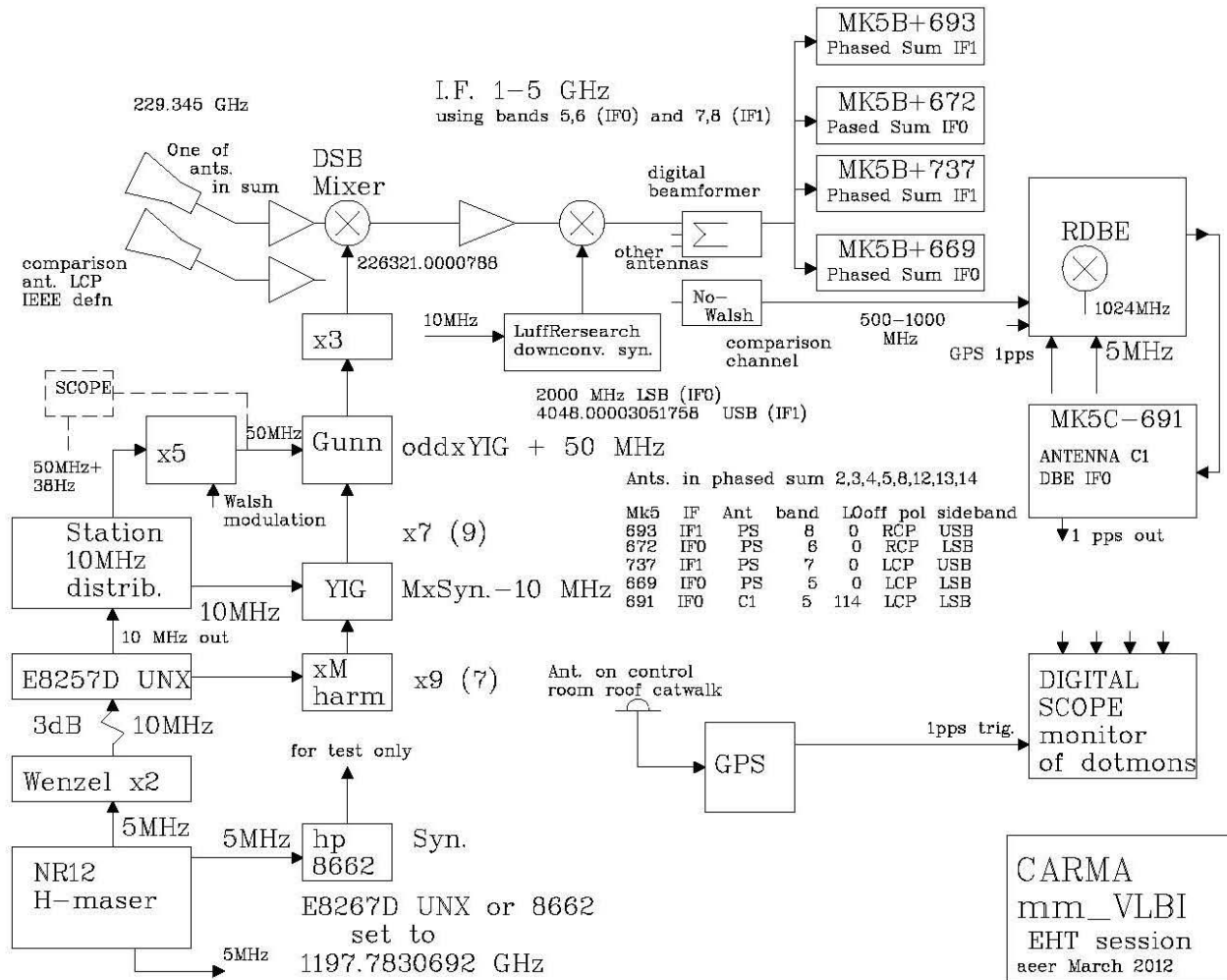


Figure 1. Block diagram of set-up.

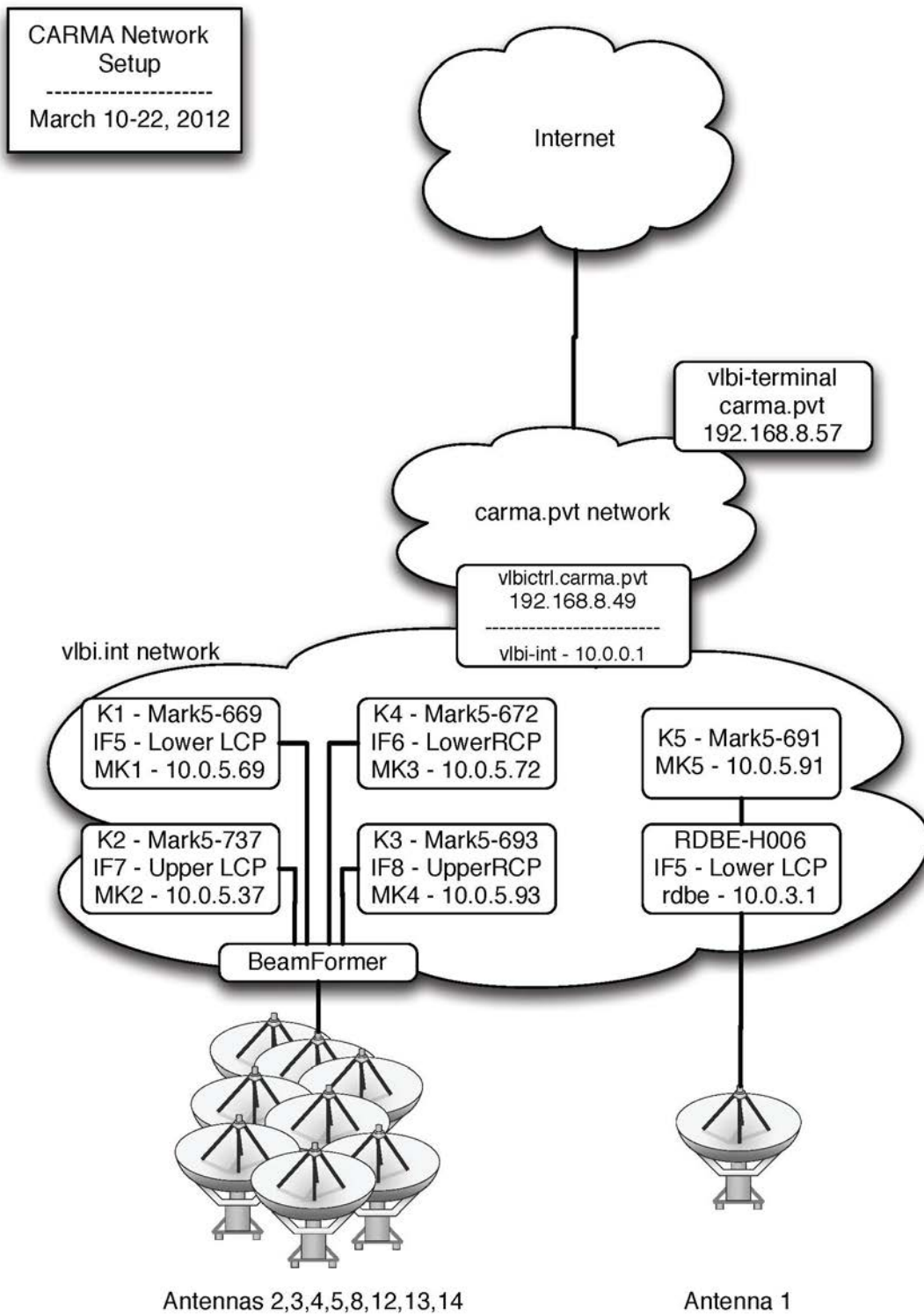


Figure 2. Carma Network Diagram - uvlbi2012