

Status of EVN Amplitude Calibration

Session 1/2013

The following table shows the median absolute amplitude error for EVN stations in the first session of 2013 (Feb/Mar). These results were derived from the pipeline amplitude self-calibration results. The number in brackets after each entry is the number of experiments that were used to determine the median error for that entry.

Station	18 cm	5 cm
Jb2		0.18(6)*
Jb1	0.19(4)*	
Ef	0.07(6)	0.05(6)
Mc	0.15(8)*	0.12(6)
On	0.04(9)	0.09(6)
Tr	0.05(8)	0.06(6)
Wb	0.03(9)	0.11(6)
Ys		0.05(6)
Hh	0.09(2)	0.03(1)
Ur	0.13(8)*	
Sh	0.10(7)	
Bd	0.05(4)	
Zc	0.12(3)*	
Sv	0.08(3)	
Ar	0.05(1)	
Ro	0.05(1)	

The blank entries indicates insufficient data. The numbers above are the median absolute error in the antenna gain amplitude (as calculated from pipeline amplitude self calibration). A value above 0.1 indicates a significant error which should be investigated. In addition to the absolute errors summarized here, the EVN pipeline provides details on every experiment processed at JIVE including the sign and time variability of the errors. In each experiment, the self-calibration results of a bright and compact source were used to get the reliable results. Note that nominal SEFDs, listed in the EVN status table, were used to make antab files for Bd, Sv, Zc.

*Jb1: Its 6cm SEFD was ~10 times worse than the nominal value. Station VLBI friends gave the following feedback: A problem with our HM11 cable carrying LO up the Lovell Telescope meant there were occasional decreases in Rx

power by up to 10dB. These drop outs were not noted by controllers and could have occurred at any time and remain for several hours. This feedback might explain its poor sensitivity. Because of the problem, there were no reliable pipeline self-calibration solutions for the other stations at 6cm.

*Jb2: Its SEFD was ~4500 Jy at 5cm, ~10000 Jy at 1.3cm. After a contact with station VLBI friends, it was found that Jb2 had some problems with pointing model. The significantly large amplitude calibration error caused that the pipeline amplitude self-calibration could not give proper and reliable solutions to most stations, such as Mc and Wb in the above Table.

*Mc: It was reported that the L-band receiver was not positioned correctly on the focus. This explained the increase of its SEFD by a factor of 5 in the last four L-band experiments that we found in the pipeline results.

*Zc: Significant sensitivity loss was found in N13L1, EP087C (SEFD ~ 2000 Jy, a factor of about six worse than the nominal value).

*Ur: The L-band rxg file was not properly updated.

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