

VLA/VLBA Interference Memo No. 28

Memorandum

Date: August 16, 2002

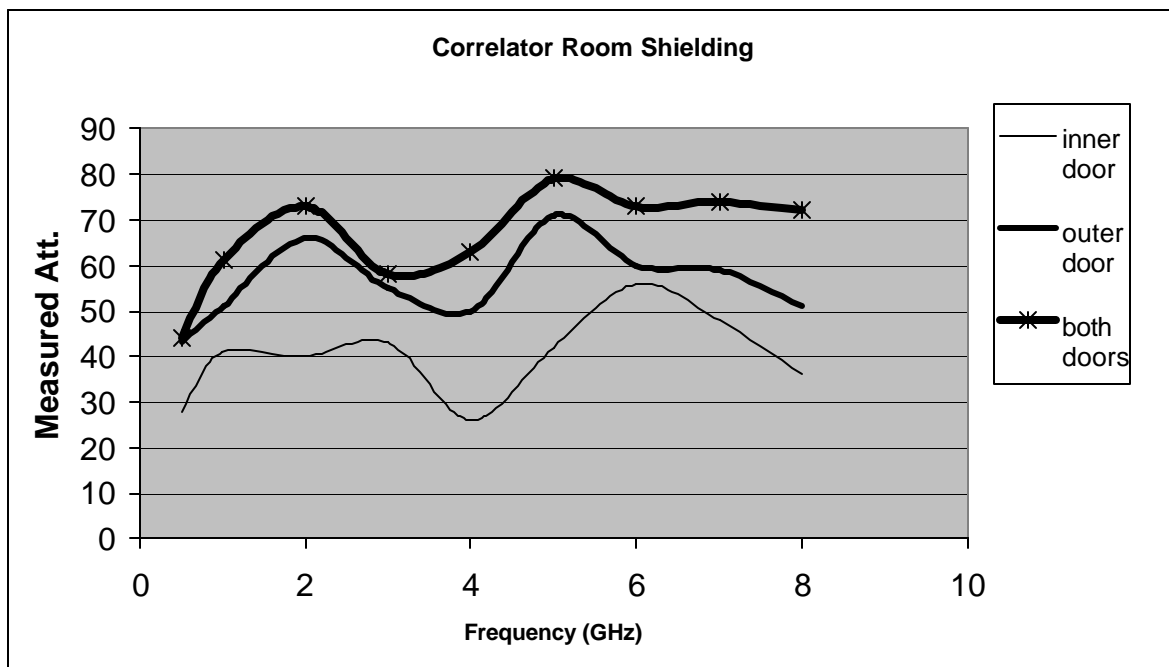
From: Chris Patscheck

Subject: Shielding Characteristics Of the Correlator Room, SLOB, Pedestal and Vertex Rooms at the VLA Site

On August 14, 2002, shielding tests were performed on the Correlator Room, the SLOB, and the Pedestal Room. This report documents the results of these tests as well as the results of a number of previous tests done to determine the shielding of the Vertex Room. Tests for all but the Vertex Room were carried out from 500MHz to 8GHz. The tests for the vertex room were carried out at L-band only, because this band is a problem area for many pieces of equipment at the site.

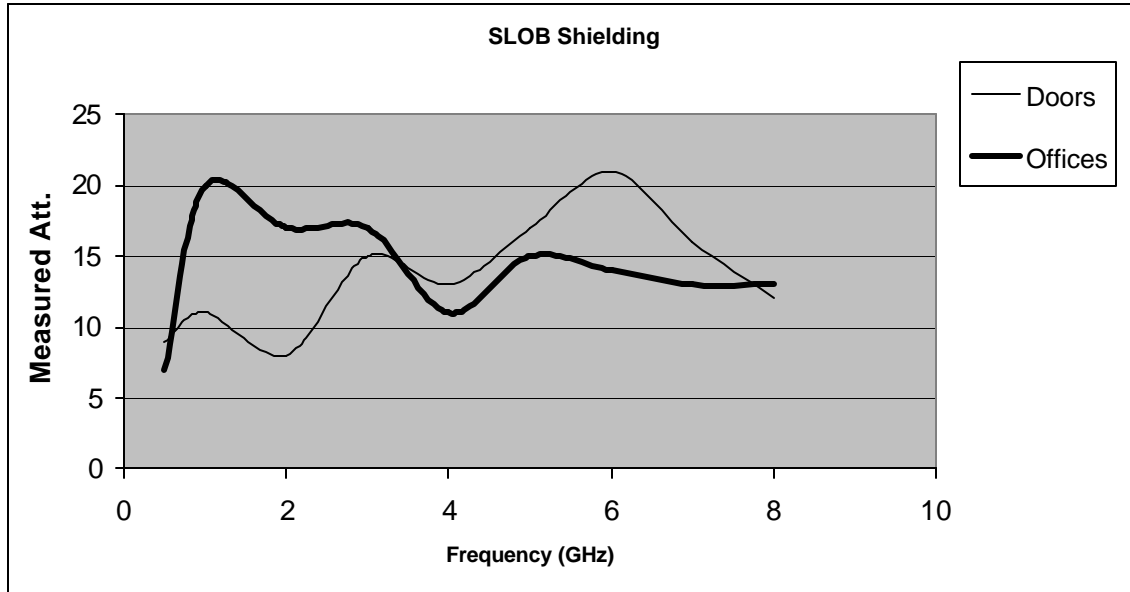
Correlator Room

The Correlator room had previously been believed to give nearly 90dB of effective shielding with both doors closed. The tests conducted show that this is simply not the case. Also, even during observations, it is not uncommon to have only one door closed, especially during entry or egress from the Correlator Room. A calibration run was performed at each test frequency at the same distance as the measurement was made. Then, tests were done for the inner door only, outer door only, and both doors closed.



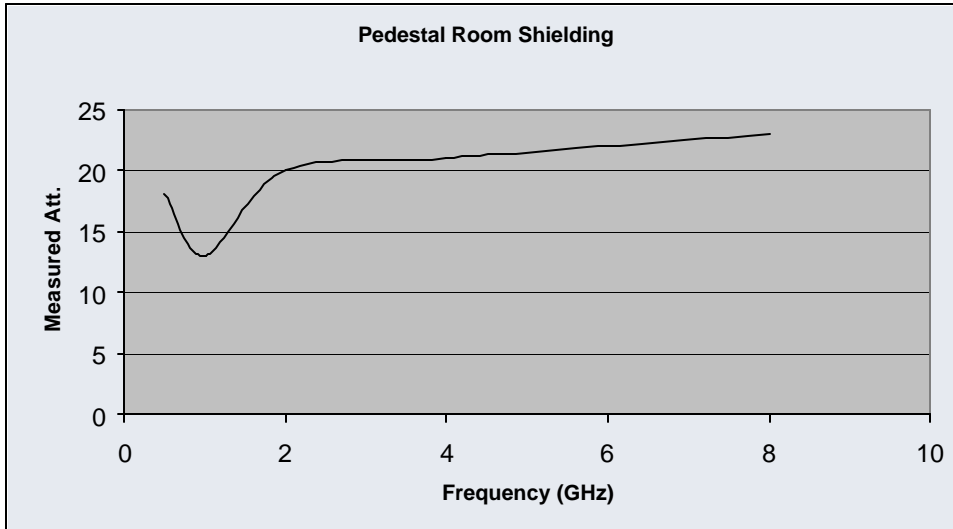
SLOB

There is no recorded data that shows the shielding of the SLOB at the VLA. The tests performed showed average shielding of about 15-20dB. This was quite surprising as there have been no attempts to shield this building in any way. The metal doors, small windows, and thick walls may have helped to shield this building very well.



Pedestal Room

The shielding of the Pedestal Room on each antenna had previously been assigned an assumed value. The measurements performed confirm the shielding to be around 20-25dB. This is near what was found for the vertex room, which makes sense due to the similar architecture.



Vertex Room

The Vertex Room has previously been assumed to have approximately 30dB of shielding. It was found through numerous testing that the shielding of the Vertex Room at L-band is around 25dB. Also, the path loss from inside the Vertex room to the L-band feed in the same antenna is roughly 70dB. The worst-case scenario for interference has been found to be from one Vertex Room to an adjacent antenna's feed. The shielding and space loss for the D-configuration along this path is around 55dB.

This memo, along with previous VLA/VLBA Interference memos, presents shielding characteristics for nearly every pertinent area, in terms of shielding, at the VLA site. Further tests are planned to extend the frequency coverage of the shielding tests at the VLA site.