Total power box

Acoustic Vibration Demo

Total Power and Acoustic Vibrations at the beginning of the night.

9:45 pm local time at LMT. An illustration of the optimal derived bias voltage for the SIS mixer and the total power output on the scope of RCP. Aleks demonstrates the affect of acoustic vibration.

Click on the link here to see the video:

Video

Video of test tone: Stability of LMT VLBI System:

We Derived a 230GHz test tone from the LMT maser and injected it directly into the feed of the new Rx. This was mixed down using the first LO 0f 232.1GHz and then through the VLBI downconverter (LO=6GHz) to a frequency of 380MHz. This tone was further mixed using a phase locked synthesizer tuned to 370MHz to 10MHz. THis 10MHz was displayed on a scope triggered by a 10MHz from the LMT Maser. The resulting trace was clear and phase stable but of marginal SNR (due to broadband noise away from the tone). To compensate we used the scope's averaging function to average a running boxcar of 64 traces. The video below shows that this average is quite stable:

Video 23-03-15 07 48 42.mov

Note that though this video shows 64 averages, the individual scope sweeps showed a variation in phase of only ~1/8 of a wavelength, and the absolute phase was stable for many minutes.

Here is the block diagram of the test tone:

lmt_230_test_tone.png

and a PDF of the block diagram is available below.

Filter

We want to add a simple RC filter that we can build from components here as a low pass filter to anti-alias input into the Total noise box. Might be useful to filter out other junk like 10 Hz signal.

reference to undefined name 'iframe' Exception of type 'MindTouch.Deki.Script.Runtime.DekiScriptUndefinedNameException' was thrown. (click for details)