

## **RFCB Output Description & Desiderata**

*JWD 2007 Mar 28*

BW 600 MHz, can be tuned within the range TBD to 5 GHz by varying LO2 frequency. Normal IF2 range is 330 MHz to 930 MHz.

AC coupled, 50  $\Omega$ , SMA connectors, return loss ~20 dB

Output power  $-4 \pm 6$  dBm when only input to system is  $T_{sys}$ . The general ATA specification requires that we can handle RFI signals whose received power equals the noise power in the entire 0.5 to 11.3 GHz RF band. In the 600 MHz IF2 bandwidth such a signal would be 12 dB with respect to the system noise. The output P1dB of the Sirenza SGA-3386 IF2 output amplifier is stated to be 12 dBm and the IP3 is 25 dBm. I have not measured the actual values yet, nor do I know the level of 2<sup>nd</sup> harmonic distortion.

The general ATA gain and phase stability specification is gain variation due to electronics to be  $\leq 10\%$  over 1 hour and phase variation due to electronics to be  $\leq 30$  degrees. The goals are 3% and 3 degrees respectively. No formal gain and phase error budget is available, but most of the variation is expected from the SM fiber links.

Cross talk between the same tuning of different antennas should be  $< -130$  dBc. By calculation this appears to be true for the RFCB but it has not yet been measured.

SETI detectors can find signals that are  $-100$  dBc with respect to the total power in a 600 MHz band. It would be nice if spurious signals could be that low.