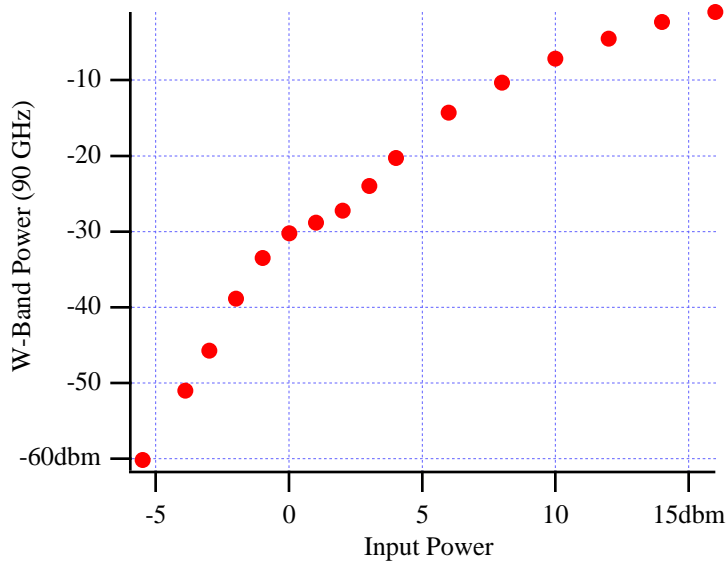


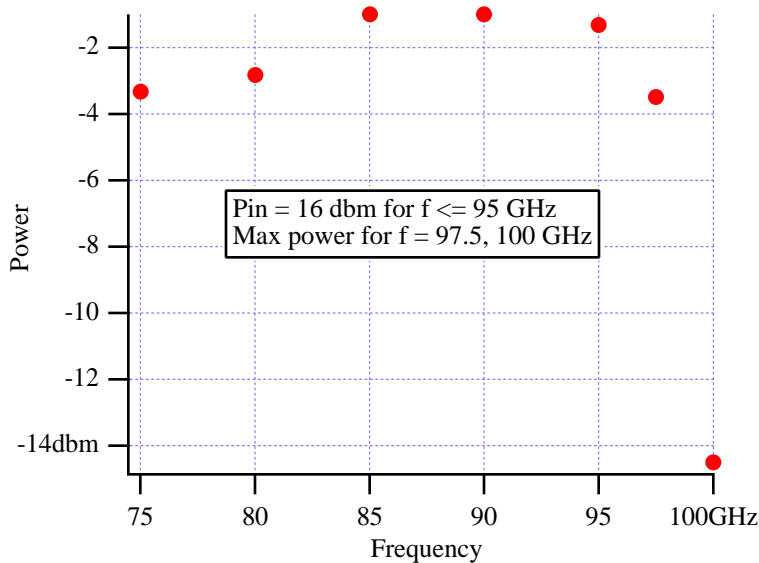
W-Band Power Measurements

The following presents the results of a first set of power measurements at W-band. The source was a 85100W 75 - 100 GHz source module that is a 5 times multiplier driven by an 8349B amplifier and an HP 8673D synthesizer. The detector was a HP 11970W external mixer connected to an HP 8562 spectrum analyzer. The mixer uses the 18th harmonic of the spectrum analyzer local oscillator. The average conversion gain of the mixer is about 42 db. This value was used throughout the measurements even though there is a few db variation across the bandwidth.



Source module output power vs input power (90 GHz)

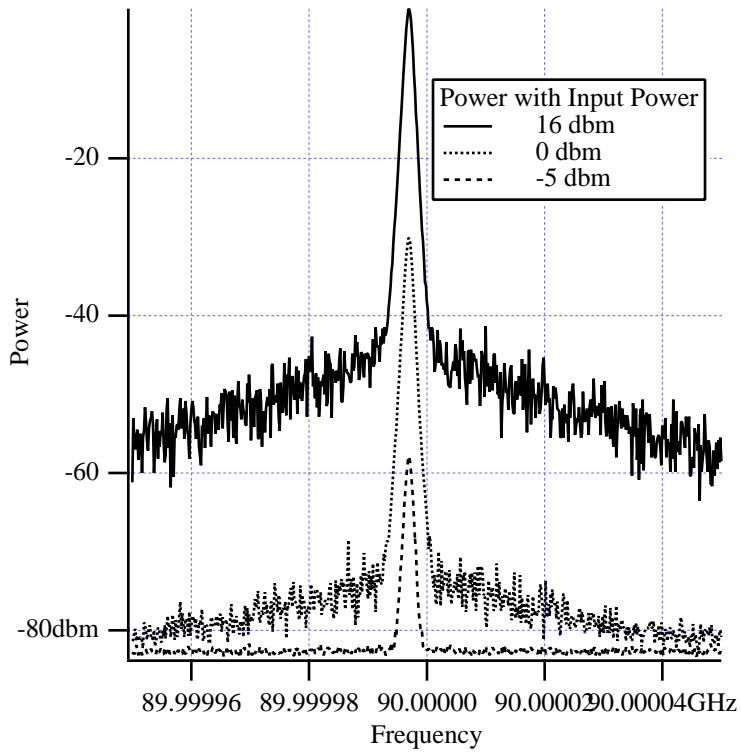
With a fixed input power of +16 dbm up to 95 GHz and then the maximum input power that could be obtained above that, the output power vs frequency is as below. These data are not



Frequency scan of output power

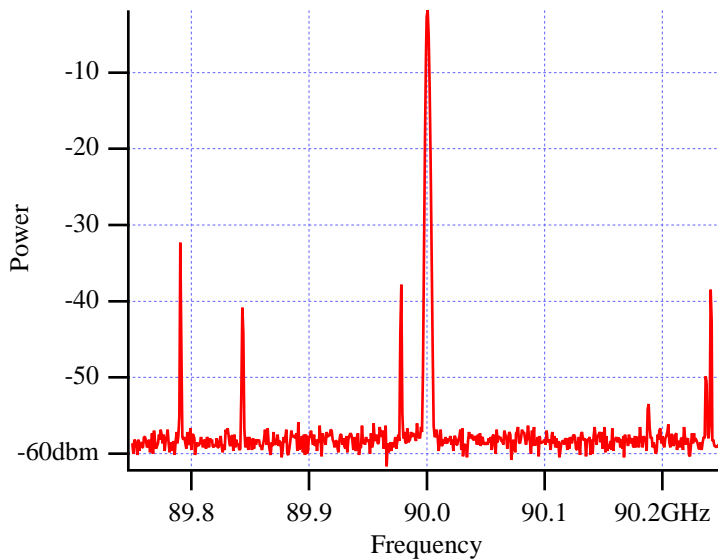
corrected for the frequency dependence of the conversion gain.

The spectra for different input powers are below. At high power, the peak is over 40 db above background.



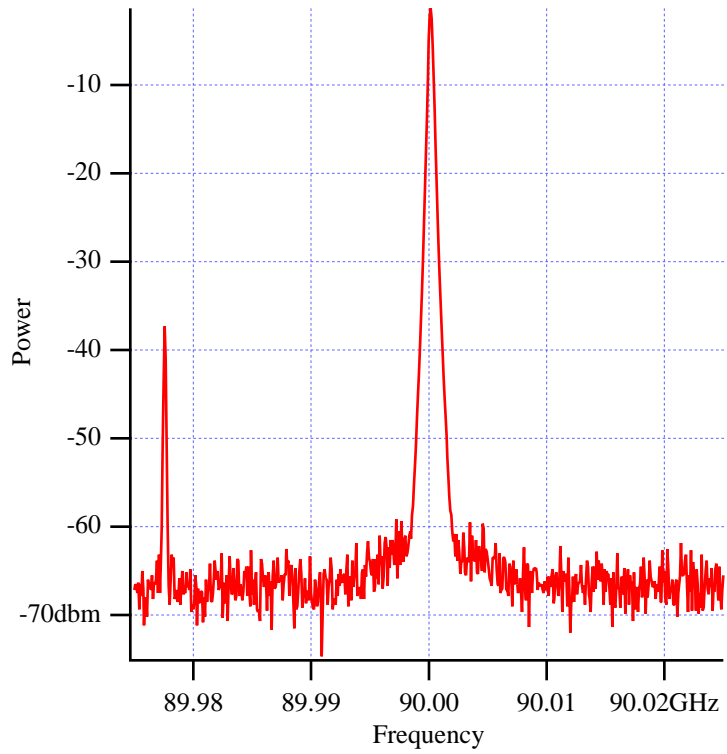
90 GHz spectra for different input powers

There will be spurious lines detected due to different harmonics of the multiplier and detector. The spectrum for a 0.5 GHz wide span is



Spectrum over 0.5 GHz span

The closest line is 22.58 MHz and ~ 40 db below the true 90 GHz source line.



True line and closest alias.