POLARBEAR 8.2.1 Comb A Detectors

This document reports noise results. There is one page per detector that describes the parameters used, the noise calculation and a plot of the timestream used and its power spectrum. Also, one plot per comb is shown showing measured and predicted noise as a function of bias frequency.

The demodulator gain and frequency, the carrier gain and amplitude, the nuller gain and amplitude and the SQUID feedback loop, flux bias and current bias are parameters read from the DfMUX and SQUID controller boards. Values of -1 indicates that the value was not known at the time and other values can be wrong (do not trust calculated numbers if a -1 is present).

The voltage bias is calculated using the transfer function (refer to the DfMUXTransferFunctionsMemo memo). R normal is obtained from the width of the peaks in the network analysis. R is assumed to be x$\times R_n$ for a bolometer in transition where x is the position in the transition (0.8 for 80% in transition for example). The leadlag resistance is assumed to be 20Ω. The optical loading is approximated by subtracting the power at turnaround when bolometers were tuned from the power at turnaround when bolometers were tuned dark. T_c is a measured value and the bath temperature is simply the temperature the detectors are heatsunk to. The average thermal conductance is obtained from the bolometer tuning dark and the dynamical G is calculated from it (refer to the BoloNoiseMemo memo).

The list of operations done to the data is also listed. Each of the components of the calculated noise are listed. The predicted noise as well as the measured average noise between two given frequencies with its variance and the ratio of measured over predicted noise are finally listed. The frequencies between which the PSD is averaged are quoted as well.

b153-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

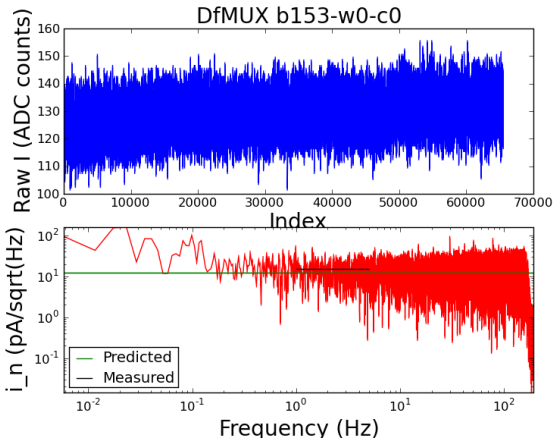
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 522177 Hz
Carrier gain is : 2
Carrier amplitude : 1.08
Nuller gain is : 2
Nuller amplitude : 0.518
Voltage bias is : 5.74992 uV_RMS
R normal is : 1.62 ohm
R is : 1.296 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.00537585205 pA/sqrt(Hz)
20 ohms noise : 1.72809111493 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.10945080417 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.87753176233 pA/sqrt(Hz)
Carrier shot noise : 2.38290310802 pA/sqrt(Hz)
Carrier digitization noise : 0.339840465876 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.70789437903 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.39444203108 pA/sqrt(Hz)
Phonon noise : 2.94777093509 pA/sqrt(Hz)

Predicted noise : 12.1075740962 pA/sqrt(Hz)
Measured noise : 15.1170524529 pA/sqrt(Hz)
Standard deviation : 8.08774605938 pA/sqrt(Hz)
Measured/predicted : 1.24856163032



b153-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

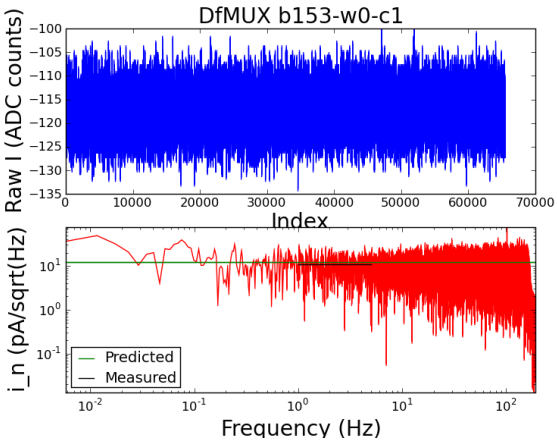
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 616488 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.518
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.69 ohm
R is : 1.69 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.07217064754 pA/sqrt(Hz)
20 ohms noise : 1.76649812234 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.200783782 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.20667524496 pA/sqrt(Hz)
Carrier shot noise : 2.61805107663 pA/sqrt(Hz)
Carrier digitization noise : 0.260611386849 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.70789437903 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.99957733297 pA/sqrt(Hz)

Predicted noise : 12.0426729669 pA/sqrt(Hz)
Measured noise : 10.9195856978 pA/sqrt(Hz)
Standard deviation : 5.58060536307 pA/sqrt(Hz)
Measured/predicted : 0.90674103065



b153-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

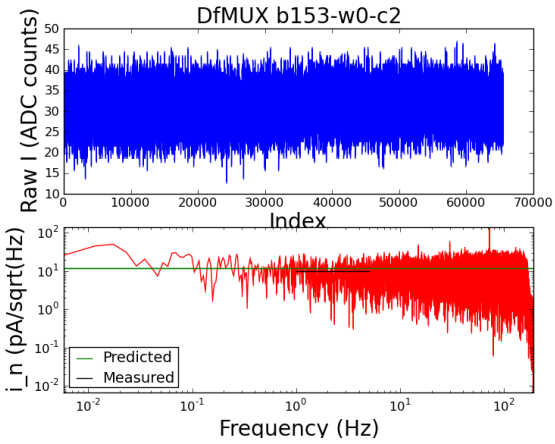
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 707700 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.492
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.75 ohm
R is : 1.75 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.14553639666 pA/sqrt(Hz)
20 ohms noise : 1.80868342808 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.30110166287 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.13101780799 pA/sqrt(Hz)
Carrier shot noise : 2.57277876827 pA/sqrt(Hz)
Carrier digitization noise : 0.2516761393 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.63906077838 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.87853805065 pA/sqrt(Hz)

Predicted noise : 11.9945923596 pA/sqrt(Hz)
Measured noise : 10.10832311 pA/sqrt(Hz)
Standard deviation : 5.35708619225 pA/sqrt(Hz)
Measured/predicted : 0.842740028752



b153-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

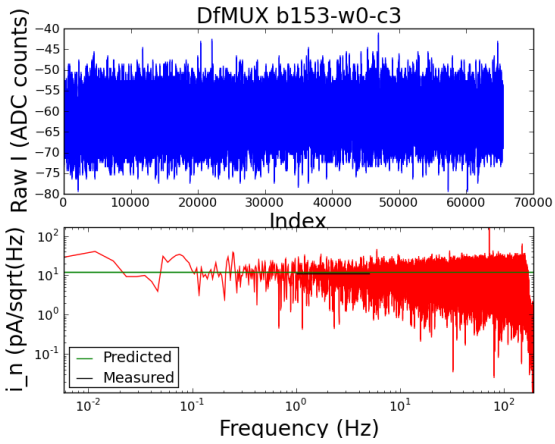
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 787827 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.556
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.72 ohm
R is : 1.72 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.21660537278 pA/sqrt(Hz)
20 ohms noise : 1.84954808935 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.39827901287 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.16818672324 pA/sqrt(Hz)
Carrier shot noise : 2.59511880058 pA/sqrt(Hz)
Carrier digitization noise : 0.256065839404 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.80546100597 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.93826598537 pA/sqrt(Hz)

Predicted noise : 12.1377908766 pA/sqrt(Hz)
Measured noise : 11.0934803036 pA/sqrt(Hz)
Standard deviation : 5.7836839289 pA/sqrt(Hz)
Measured/predicted : 0.913962055892



b153-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

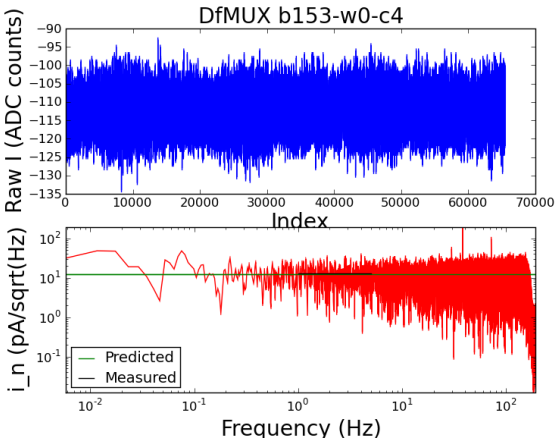
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 847089 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.541
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.59 ohm
R is : 1.59 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.2728913627 pA/sqrt(Hz)
20 ohms noise : 1.88191253355 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.4752426001 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.34545985156 pA/sqrt(Hz)
Carrier shot noise : 2.69912442516 pA/sqrt(Hz)
Carrier digitization noise : 0.27700204011 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.76735881591 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.21633367425 pA/sqrt(Hz)

Predicted noise : 12.3927591653 pA/sqrt(Hz)
Measured noise : 12.7536884777 pA/sqrt(Hz)
Standard deviation : 6.72720468916 pA/sqrt(Hz)
Measured/predicted : 1.02912420936



b153-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

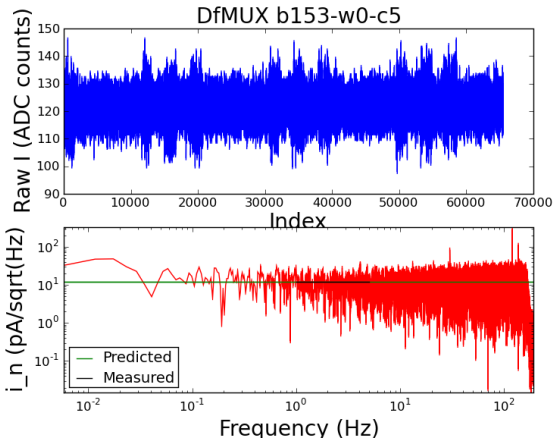
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 958239 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.484
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.79 ohm
R is : 1.79 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.38635879336 pA/sqrt(Hz)
20 ohms noise : 1.94715630618 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.63039418417 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.08339729831 pA/sqrt(Hz)
Carrier shot noise : 2.54387022408 pA/sqrt(Hz)
Carrier digitization noise : 0.246052091494 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.6175170647 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.80124865302 pA/sqrt(Hz)

Predicted noise : 12.1401183625 pA/sqrt(Hz)
Measured noise : 12.0592076855 pA/sqrt(Hz)
Standard deviation : 6.3201100679 pA/sqrt(Hz)
Measured/predicted : 0.993335264572



b153-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

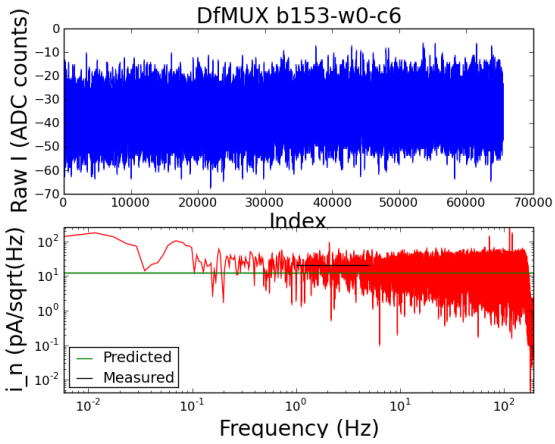
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

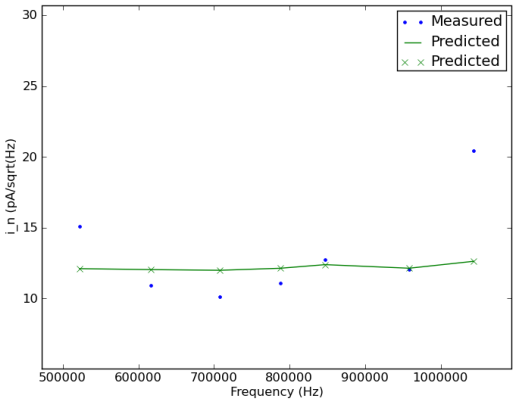
Demod gain is : 2
Demod frequency is : 1043505 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 1.288
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.83 ohm
R is : 1.83 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.47982732164 pA/sqrt(Hz)
20 ohms noise : 2.00090070994 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.42942507411 pA/sqrt(Hz)
Current bias shot noise : 4.75819993547 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.03785855955 pA/sqrt(Hz)
Carrier shot noise : 2.51591475758 pA/sqrt(Hz)
Carrier digitization noise : 0.240673903702 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 4.26996949497 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.72650738789 pA/sqrt(Hz)

Predicted noise : 12.6283319412 pA/sqrt(Hz)
Measured noise : 20.4611382598 pA/sqrt(Hz)
Standard deviation : 12.2738571091 pA/sqrt(Hz)
Measured/predicted : 1.62025660674



b153-w0


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz))
Frequency (Hz)
30
25
20
15
10
500000
600000
700000
800000
900000
1000000

b153-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

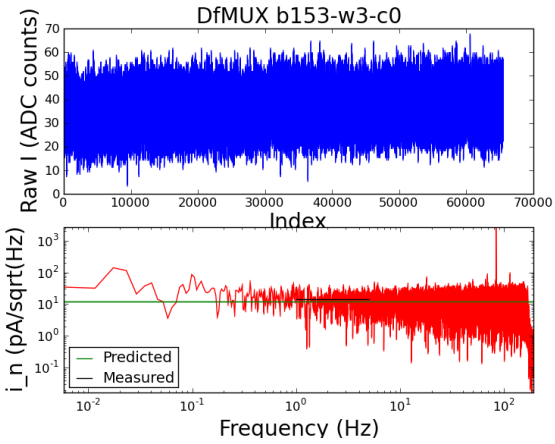
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 380394 Hz
Carrier gain is : 2
Carrier amplitude : 1.1
Nuller gain is : 2
Nuller amplitude : 0.508
Voltage bias is : 5.8564 uV_RMS
R normal is : 1.55 ohm
R is : 1.24 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.92371133403 pA/sqrt(Hz)
20 ohms noise : 1.68113401707 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 3.99076791511 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 3.00748480966 pA/sqrt(Hz)
Carrier shot noise : 2.45856959681 pA/sqrt(Hz)
Carrier digitization noise : 0.355188099819 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.68162902132 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.53723824493 pA/sqrt(Hz)
Phonon noise : 2.89417509991 pA/sqrt(Hz)

Predicted noise : 12.1775459483 pA/sqrt(Hz)
Measured noise : 14.1770539927 pA/sqrt(Hz)
Standard deviation : 7.7316421661 pA/sqrt(Hz)
Measured/predicted : 1.16419630465



b153-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

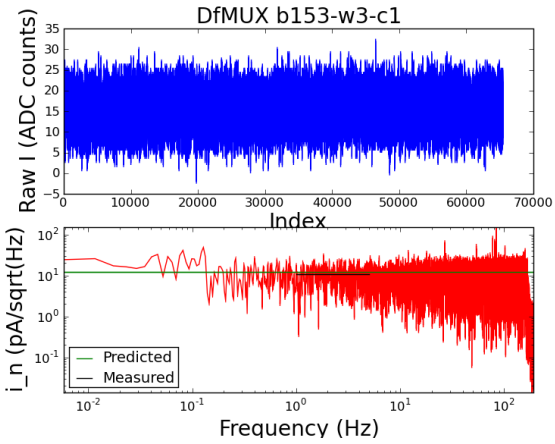
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 469851 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.505
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.62 ohm
R is : 1.62 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.97253020886 pA/sqrt(Hz)
20 ohms noise : 1.70920487009 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.05740404196 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.30202540986 pA/sqrt(Hz)
Carrier shot noise : 2.67401574523 pA/sqrt(Hz)
Carrier digitization noise : 0.271872372701 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.6736991005 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.14920352984 pA/sqrt(Hz)

Predicted noise : 12.1027583702 pA/sqrt(Hz)
Measured noise : 10.6290908799 pA/sqrt(Hz)
Standard deviation : 5.47137476635 pA/sqrt(Hz)
Measured/predicted : 0.87823705595



b153-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

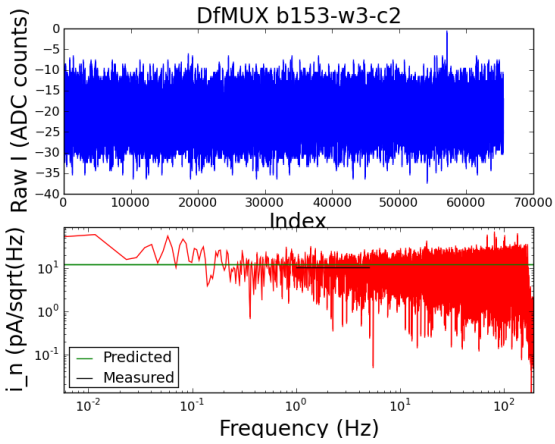
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 631053 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.536
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.59 ohm
R is : 1.59 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.08332385993 pA/sqrt(Hz)
20 ohms noise : 1.77291121946 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.20863365985 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.34545985156 pA/sqrt(Hz)
Carrier shot noise : 2.69912442516 pA/sqrt(Hz)
Carrier digitization noise : 0.27700204011 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.75454096648 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.21633367425 pA/sqrt(Hz)

Predicted noise : 12.2622343619 pA/sqrt(Hz)
Measured noise : 10.4565021576 pA/sqrt(Hz)
Standard deviation : 5.34466858935 pA/sqrt(Hz)
Measured/predicted : 0.85274036109



b153-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

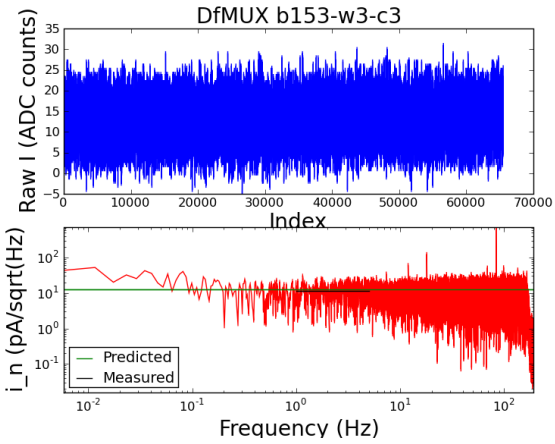
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 710043 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.588
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.56 ohm
R is : 1.56 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.14752898293 pA/sqrt(Hz)
20 ohms noise : 1.80982916519 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.29627149943 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.3905648487 pA/sqrt(Hz)
Carrier shot noise : 2.72495395554 pA/sqrt(Hz)
Carrier digitization noise : 0.28232900242 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.88506434729 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.28539107234 pA/sqrt(Hz)

Predicted noise : 12.3989642387 pA/sqrt(Hz)
Measured noise : 11.7118496228 pA/sqrt(Hz)
Standard deviation : 6.00977478009 pA/sqrt(Hz)
Measured/predicted : 0.94458290203



b153-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

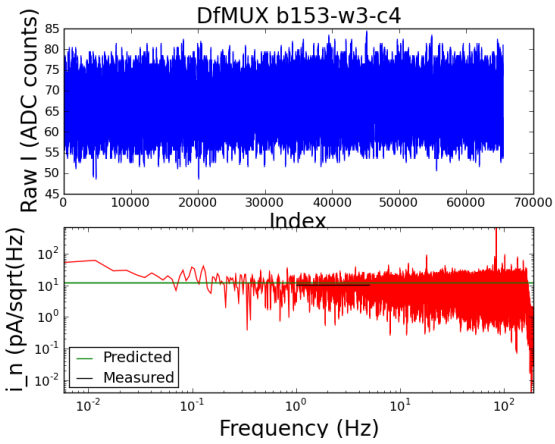
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 811617 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.495
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.76 ohm
R is : 1.76 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.2388322258 pA/sqrt(Hz)
20 ohms noise : 1.86232852984 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.42089736381 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.11890975226 pA/sqrt(Hz)
Carrier shot noise : 2.56545932594 pA/sqrt(Hz)
Carrier digitization noise : 0.250246161236 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.64709446752 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.85896891271 pA/sqrt(Hz)

Predicted noise : 12.089777659 pA/sqrt(Hz)
Measured noise : 10.2750605283 pA/sqrt(Hz)
Standard deviation : 5.52655223456 pA/sqrt(Hz)
Measured/predicted : 0.849896567011



b153-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

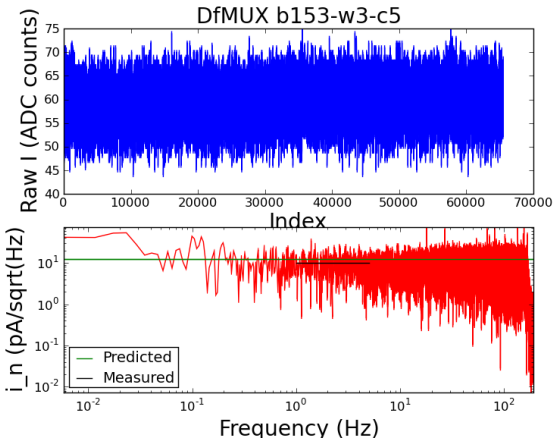
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 874749 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.457
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.66 ohm
R is : 1.66 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.30019168821 pA/sqrt(Hz)
20 ohms noise : 1.89761022072 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.50465097212 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.24655491806 pA/sqrt(Hz)
Carrier shot noise : 2.64160223529 pA/sqrt(Hz)
Carrier digitization noise : 0.26532123119 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.54346016914 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.06254331472 pA/sqrt(Hz)

Predicted noise : 12.2760655849 pA/sqrt(Hz)
Measured noise : 10.0819786627 pA/sqrt(Hz)
Standard deviation : 5.39090011867 pA/sqrt(Hz)
Measured/predicted : 0.821271163225



b153-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

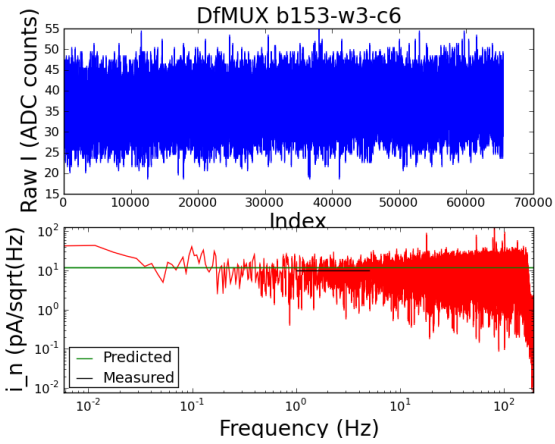
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

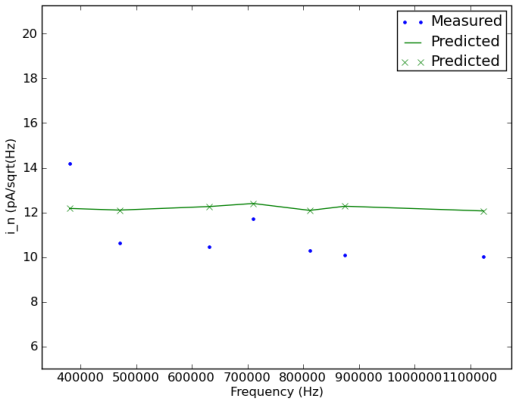
Demod gain is : 2
Demod frequency is : 1123656 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.449
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.99 ohm
R is : 1.99 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.57231580024 pA/sqrt(Hz)
20 ohms noise : 2.05408158514 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.67763471219 pA/sqrt(Hz)
Current bias shot noise : 4.8760912585 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 1.87401063516 pA/sqrt(Hz)
Carrier shot noise : 2.41265336257 pA/sqrt(Hz)
Carrier digitization noise : 0.221323238078 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.52109964579 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.45042945865 pA/sqrt(Hz)

Predicted noise : 12.0654995218 pA/sqrt(Hz)
Measured noise : 10.0156051158 pA/sqrt(Hz)
Standard deviation : 5.10927440555 pA/sqrt(Hz)
Measured/predicted : 0.830102814861



b153-w3


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
20
18
16
14
12
10
8
6
400000
500000
600000
700000
800000
900000
1000000
1100000

b154-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

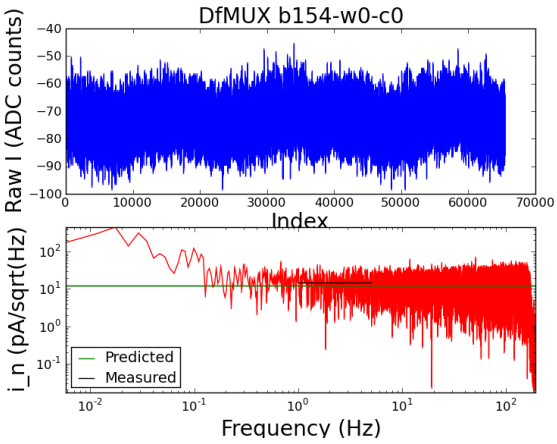
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 427917 Hz
Carrier gain is : 2
Carrier amplitude : 1.05
Nuller gain is : 2
Nuller amplitude : 0.512
Voltage bias is : 5.5902 uV_RMS
R normal is : 1.59 ohm
R is : 1.272 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.94847140507 pA/sqrt(Hz)
20 ohms noise : 1.69537105792 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 3.92051310421 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.93182481445 pA/sqrt(Hz)
Carrier shot noise : 2.37163636354 pA/sqrt(Hz)
Carrier digitization noise : 0.346252550138 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.69216591465 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.45448505758 pA/sqrt(Hz)
Phonon noise : 3.03199296181 pA/sqrt(Hz)

Predicted noise : 12.1338530885 pA/sqrt(Hz)
Measured noise : 15.1626622067 pA/sqrt(Hz)
Standard deviation : 8.21017536963 pA/sqrt(Hz)
Measured/predicted : 1.24961643232



b154-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

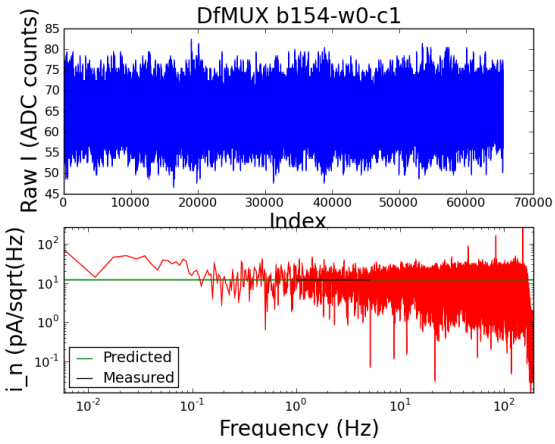
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 512388 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.528
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.64 ohm
R is : 1.64 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.99899700366 pA/sqrt(Hz)
20 ohms noise : 1.7244232771 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 3.98769580471 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.27395192925 pA/sqrt(Hz)
Carrier shot noise : 2.65766075545 pA/sqrt(Hz)
Carrier digitization noise : 0.26855685596 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.73390741028 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.10547710418 pA/sqrt(Hz)

Predicted noise : 12.082568869 pA/sqrt(Hz)
Measured noise : 12.5045628548 pA/sqrt(Hz)
Standard deviation : 6.52289558432 pA/sqrt(Hz)
Measured/predicted : 1.03492584982



b154-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

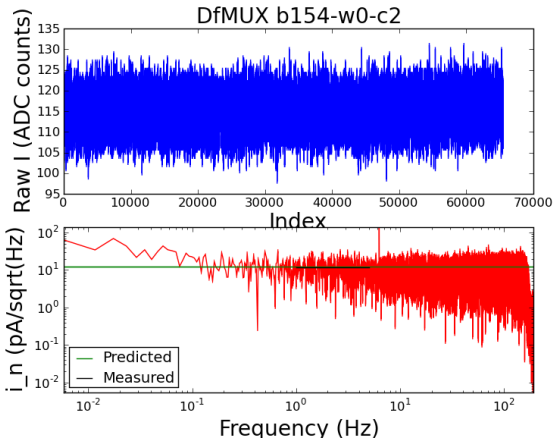
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 588882 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.503
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.63 ohm
R is : 1.63 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.05163596116 pA/sqrt(Hz)
20 ohms noise : 1.75469067767 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.05768858888 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.28790255459 pA/sqrt(Hz)
Carrier shot noise : 2.66580062368 pA/sqrt(Hz)
Carrier digitization noise : 0.270204444034 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.66839939439 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.12723971901 pA/sqrt(Hz)

Predicted noise : 12.1259679805 pA/sqrt(Hz)
Measured noise : 11.8145824338 pA/sqrt(Hz)
Standard deviation : 6.19279942734 pA/sqrt(Hz)
Measured/predicted : 0.974320767861



b154-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

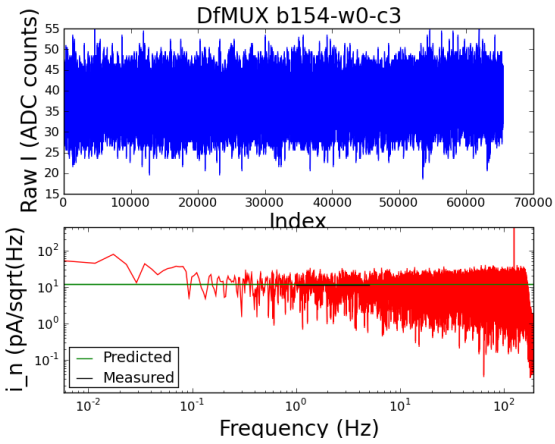
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 679236 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.48
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.68 ohm
R is : 1.68 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.12175401462 pA/sqrt(Hz)
20 ohms noise : 1.79500855841 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.15092291598 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.21981021665 pA/sqrt(Hz)
Carrier shot noise : 2.62583133472 pA/sqrt(Hz)
Carrier digitization noise : 0.262162645104 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.60667843817 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.02037850017 pA/sqrt(Hz)

Predicted noise : 12.0838846006 pA/sqrt(Hz)
Measured noise : 11.5649985411 pA/sqrt(Hz)
Standard deviation : 6.13564688777 pA/sqrt(Hz)
Measured/predicted : 0.95705966445



b154-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

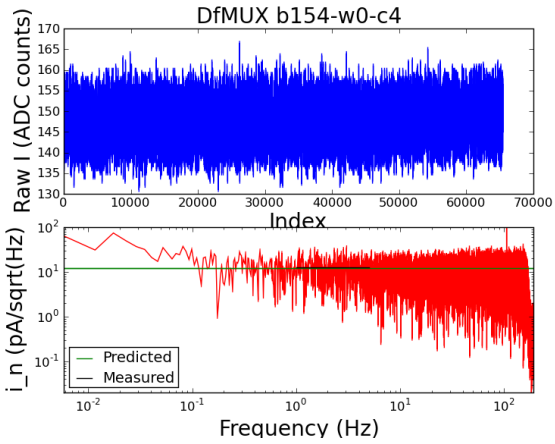
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 758955 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.558
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.57 ohm
R is : 1.57 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.19031247396 pA/sqrt(Hz)
20 ohms noise : 1.83442967253 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.24208348745 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.37533832101 pA/sqrt(Hz)
Carrier shot noise : 2.71626189526 pA/sqrt(Hz)
Carrier digitization noise : 0.280530728519 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.8105022697 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.26215212614 pA/sqrt(Hz)

Predicted noise : 12.3744180292 pA/sqrt(Hz)
Measured noise : 12.7965914153 pA/sqrt(Hz)
Standard deviation : 6.98282745653 pA/sqrt(Hz)
Measured/predicted : 1.03411662553



b154-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

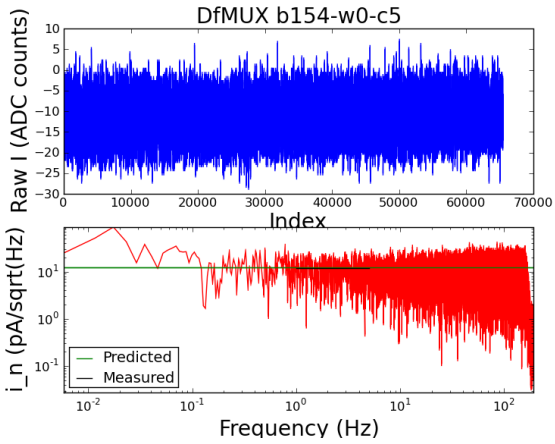
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 859341 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.513
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.72 ohm
R is : 1.72 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.28490503255 pA/sqrt(Hz)
20 ohms noise : 1.88882039371 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.36786098858 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.16818672324 pA/sqrt(Hz)
Carrier shot noise : 2.59511880058 pA/sqrt(Hz)
Carrier digitization noise : 0.256065839404 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.69479370045 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.93826598537 pA/sqrt(Hz)

Predicted noise : 12.1733349839 pA/sqrt(Hz)
Measured noise : 11.6650469332 pA/sqrt(Hz)
Standard deviation : 5.73868300195 pA/sqrt(Hz)
Measured/predicted : 0.958245784637



b154-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

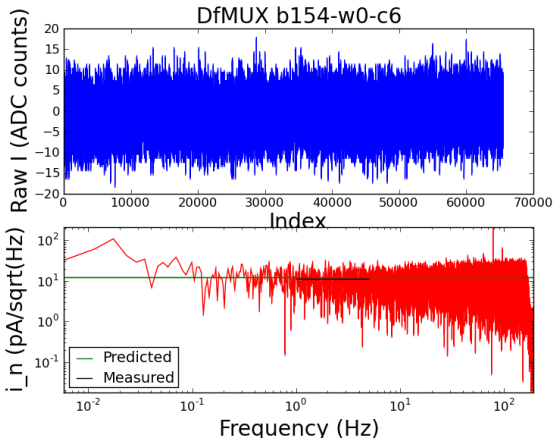
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 946806 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.479
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.74 ohm
R is : 1.74 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.37423591401 pA/sqrt(Hz)
20 ohms noise : 1.94018565055 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.48664216135 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.14326503677 pA/sqrt(Hz)
Carrier shot noise : 2.58016121894 pA/sqrt(Hz)
Carrier digitization noise : 0.253122553894 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.60396173244 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.89827564661 pA/sqrt(Hz)

Predicted noise : 12.1988686495 pA/sqrt(Hz)
Measured noise : 11.3358509879 pA/sqrt(Hz)
Standard deviation : 5.89399401519 pA/sqrt(Hz)
Measured/predicted : 0.929254286903



b154-w0-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

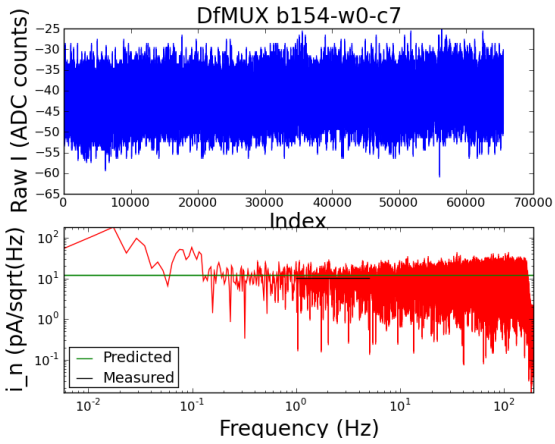
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

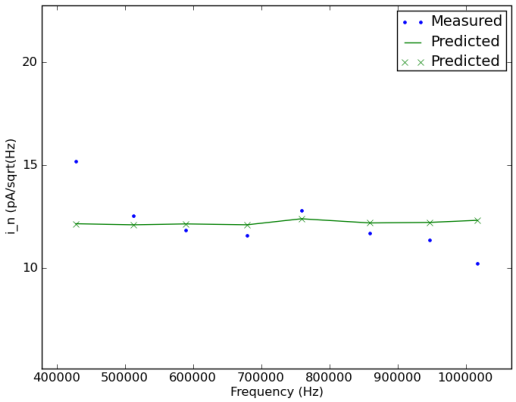
Demod gain is : 2
Demod frequency is : 1016985 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.436
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.7 ohm
R is : 1.7 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.45019211602 pA/sqrt(Hz)
20 ohms noise : 1.98386046671 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.7865763464 pA/sqrt(Hz)
Current bias shot noise : 4.58763933733 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.19369480234 pA/sqrt(Hz)
Carrier shot noise : 2.61033956923 pA/sqrt(Hz)
Carrier digitization noise : 0.259078378691 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.48433458616 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.97895997645 pA/sqrt(Hz)

Predicted noise : 12.3007314029 pA/sqrt(Hz)
Measured noise : 10.1896121469 pA/sqrt(Hz)
Standard deviation : 5.33349630782 pA/sqrt(Hz)
Measured/predicted : 0.828374493609



b154-w0


Measured
Predicted
Predicted
20
15
10
i_n (pA/sqrt(Hz)
400000
500000
600000
700000
800000
900000
1000000
Frequency (Hz)

b154-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

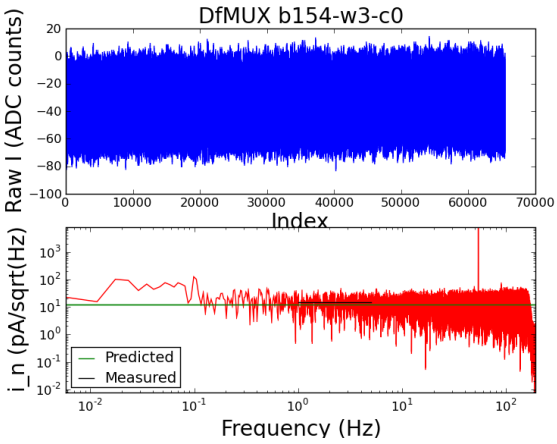
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 367212 Hz
Carrier gain is : 2
Carrier amplitude : 1.1
Nuller gain is : 2
Nuller amplitude : 0.522
Voltage bias is : 5.8564 uV_RMS
R normal is : 1.58 ohm
R is : 1.264 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.91732405242 pA/sqrt(Hz)
20 ohms noise : 1.67746133014 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.22889042203 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.9503806677 pA/sqrt(Hz)
Carrier shot noise : 2.43511688653 pA/sqrt(Hz)
Carrier digitization noise : 0.348444021974 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.71832946348 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.47487842611 pA/sqrt(Hz)
Phonon noise : 2.89417509991 pA/sqrt(Hz)

Predicted noise : 12.2258684981 pA/sqrt(Hz)
Measured noise : 14.7763903787 pA/sqrt(Hz)
Standard deviation : 7.79176287385 pA/sqrt(Hz)
Measured/predicted : 1.20861682595



b154-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

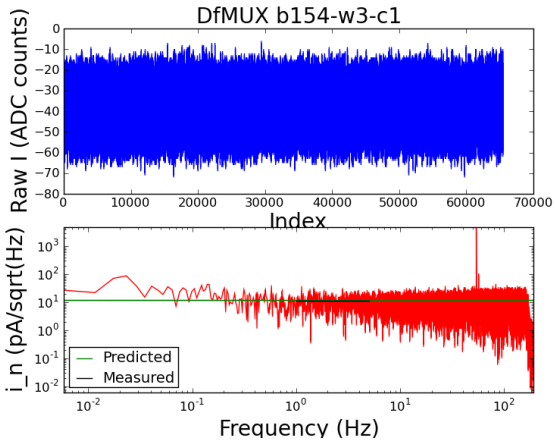
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 450729 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.54
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.62 ohm
R is : 1.62 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.96130579249 pA/sqrt(Hz)
20 ohms noise : 1.70275083068 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.29264540982 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.30202540986 pA/sqrt(Hz)
Carrier shot noise : 2.67401574523 pA/sqrt(Hz)
Carrier digitization noise : 0.271872372701 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.7648 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.14920352984 pA/sqrt(Hz)

Predicted noise : 12.2144358993 pA/sqrt(Hz)
Measured noise : 10.9513642375 pA/sqrt(Hz)
Standard deviation : 5.54180001739 pA/sqrt(Hz)
Measured/predicted : 0.896591895666



b154-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

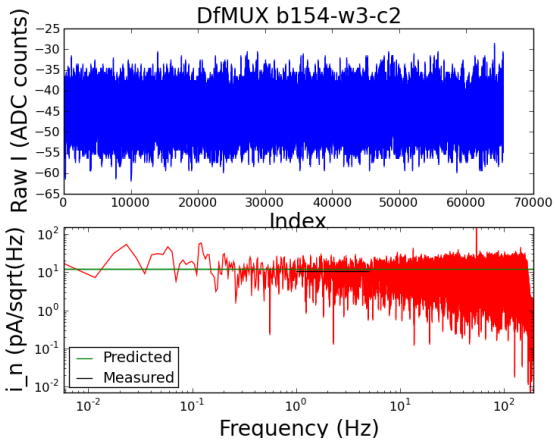
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 529710 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.494
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.64 ohm
R is : 1.64 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.01035702267 pA/sqrt(Hz)
20 ohms noise : 1.73095528803 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.36374902181 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.27395192925 pA/sqrt(Hz)
Carrier shot noise : 2.65766075545 pA/sqrt(Hz)
Carrier digitization noise : 0.26855685596 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.64441928294 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.10547710418 pA/sqrt(Hz)

Predicted noise : 12.194498006 pA/sqrt(Hz)
Measured noise : 10.501347829 pA/sqrt(Hz)
Standard deviation : 5.35271823429 pA/sqrt(Hz)
Measured/predicted : 0.861154581666



b154-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

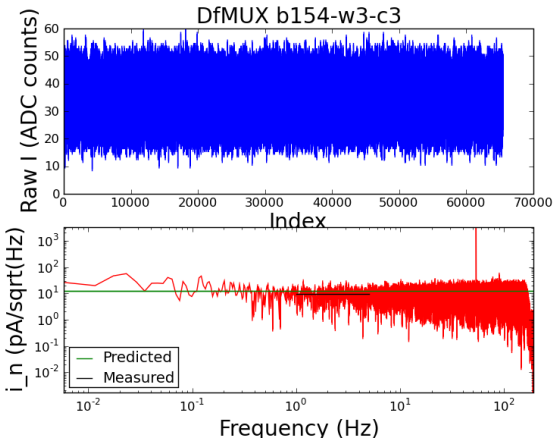
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 630825 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.457
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.8 ohm
R is : 1.8 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.08314758827 pA/sqrt(Hz)
20 ohms noise : 1.77280986326 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.46926466565 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.07182286888 pA/sqrt(Hz)
Carrier shot noise : 2.53679407623 pA/sqrt(Hz)
Carrier digitization noise : 0.244685135431 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.54346016914 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.78232998313 pA/sqrt(Hz)

Predicted noise : 11.9874074158 pA/sqrt(Hz)
Measured noise : 9.62258599029 pA/sqrt(Hz)
Standard deviation : 4.89461938172 pA/sqrt(Hz)
Measured/predicted : 0.802724530546



b154-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

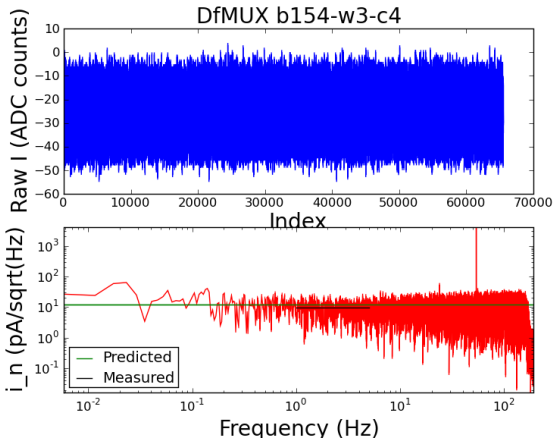
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 714396 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.542
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.72 ohm
R is : 1.72 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.15124493229 pA/sqrt(Hz)
20 ohms noise : 1.81196583606 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.56797711607 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.16818672324 pA/sqrt(Hz)
Carrier shot noise : 2.59511880058 pA/sqrt(Hz)
Carrier digitization noise : 0.256065839404 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.76991526802 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.93826598537 pA/sqrt(Hz)

Predicted noise : 12.2152082094 pA/sqrt(Hz)
Measured noise : 9.7653364644 pA/sqrt(Hz)
Standard deviation : 5.10117221277 pA/sqrt(Hz)
Measured/predicted : 0.799440852503



b154-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

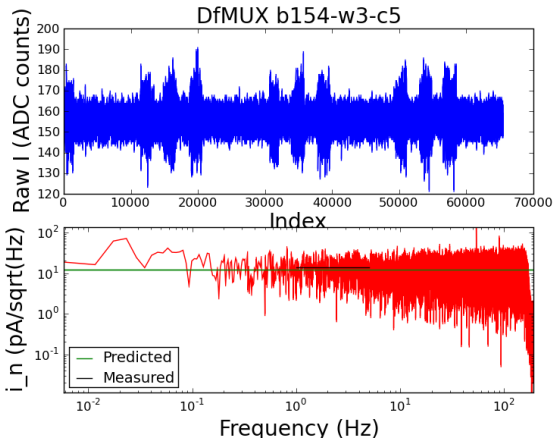
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 799047 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.495
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.82 ohm
R is : 1.82 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.22702565413 pA/sqrt(Hz)
20 ohms noise : 1.85553975112 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.67782722631 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.0490555846 pA/sqrt(Hz)
Carrier shot noise : 2.522817143 pA/sqrt(Hz)
Carrier digitization noise : 0.241996287788 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.64709446752 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.74496148948 pA/sqrt(Hz)

Predicted noise : 12.1111652308 pA/sqrt(Hz)
Measured noise : 14.1024784359 pA/sqrt(Hz)
Standard deviation : 7.41438040914 pA/sqrt(Hz)
Measured/predicted : 1.16441962165



b154-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

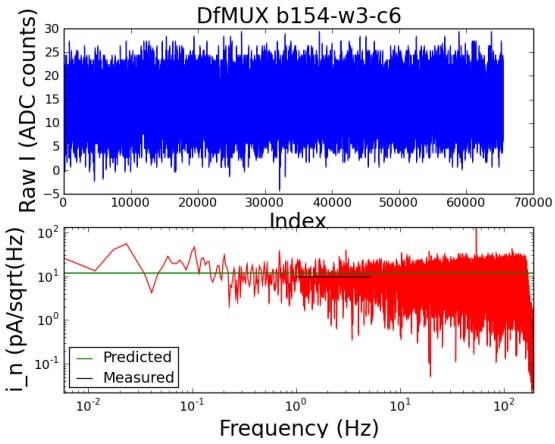
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 879132 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.476
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.83 ohm
R is : 1.83 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.30457610633 pA/sqrt(Hz)
20 ohms noise : 1.90013126114 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.79024269975 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.03785855955 pA/sqrt(Hz)
Carrier shot noise : 2.51591475758 pA/sqrt(Hz)
Carrier digitization noise : 0.240673903702 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.59579455582 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.72650738789 pA/sqrt(Hz)

Predicted noise : 12.1581223097 pA/sqrt(Hz)
Measured noise : 9.95928814731 pA/sqrt(Hz)
Standard deviation : 5.25708869784 pA/sqrt(Hz)
Measured/predicted : 0.819146895678



b154-w3-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

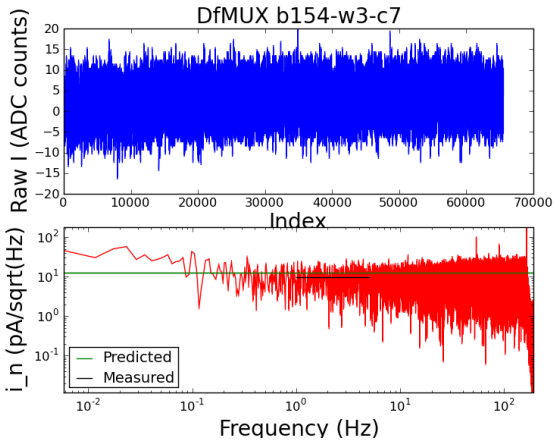
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

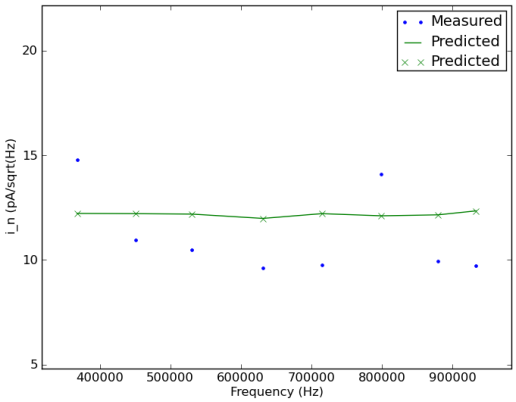
Demod gain is : 2
Demod frequency is : 933324 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.442
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.72 ohm
R is : 1.72 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.36006965612 pA/sqrt(Hz)
20 ohms noise : 1.93204005227 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.77736825876 pA/sqrt(Hz)
Current bias shot noise : 4.87068496019 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.16818672324 pA/sqrt(Hz)
Carrier shot noise : 2.59511880058 pA/sqrt(Hz)
Carrier digitization noise : 0.256065839404 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.5013702229 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.93826598537 pA/sqrt(Hz)

Predicted noise : 12.3475573734 pA/sqrt(Hz)
Measured noise : 9.71361420525 pA/sqrt(Hz)
Standard deviation : 5.03892468446 pA/sqrt(Hz)
Measured/predicted : 0.786683058964



b154-w3


Measured
Predicted
Predicted
20
15
10
5
i_n (pA/sqrt(Hz)
400000
500000
600000
700000
800000
900000
Frequency (Hz)

b155-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

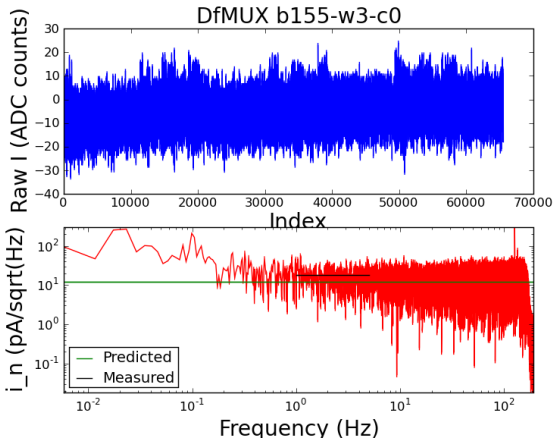
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 383193 Hz
Carrier gain is : 2
Carrier amplitude : 1.13
Nuller gain is : 2
Nuller amplitude : 0.52
Voltage bias is : 6.01612 uV_RMS
R normal is : 1.6 ohm
R is : 1.28 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.92509466301 pA/sqrt(Hz)
20 ohms noise : 1.68192943123 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.3865083646 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.91350090936 pA/sqrt(Hz)
Carrier shot noise : 2.45262552452 pA/sqrt(Hz)
Carrier digitization noise : 0.344088471699 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.71311693814 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.43428317686 pA/sqrt(Hz)
Phonon noise : 2.81733859283 pA/sqrt(Hz)

Predicted noise : 12.2150484301 pA/sqrt(Hz)
Measured noise : 17.9155445411 pA/sqrt(Hz)
Standard deviation : 9.43016805355 pA/sqrt(Hz)
Measured/predicted : 1.46667814243



b155-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

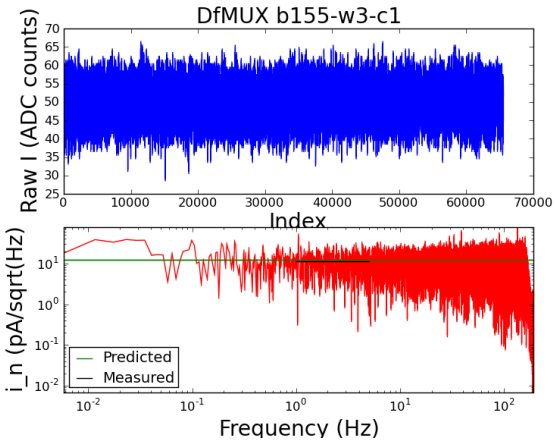
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 474282 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.517
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.65 ohm
R is : 1.65 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.9751912491 pA/sqrt(Hz)
20 ohms noise : 1.71073496823 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.46163382864 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.26017040241 pA/sqrt(Hz)
Carrier shot noise : 2.64959499859 pA/sqrt(Hz)
Carrier digitization noise : 0.266929238652 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.70527931867 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.08391263228 pA/sqrt(Hz)

Predicted noise : 12.1920102313 pA/sqrt(Hz)
Measured noise : 11.4783589991 pA/sqrt(Hz)
Standard deviation : 6.01661820425 pA/sqrt(Hz)
Measured/predicted : 0.941465663273



b155-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

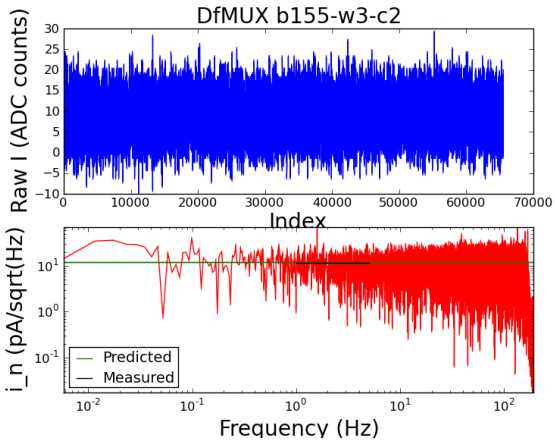
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 554574 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.484
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.62 ohm
R is : 1.62 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.02724093244 pA/sqrt(Hz)
20 ohms noise : 1.74066353615 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.53968818163 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.30202540986 pA/sqrt(Hz)
Carrier shot noise : 2.67401574523 pA/sqrt(Hz)
Carrier digitization noise : 0.271872372701 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.6175170647 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.14920352984 pA/sqrt(Hz)

Predicted noise : 12.2698491814 pA/sqrt(Hz)
Measured noise : 11.7376696964 pA/sqrt(Hz)
Standard deviation : 6.39550856132 pA/sqrt(Hz)
Measured/predicted : 0.956627055709



b155-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

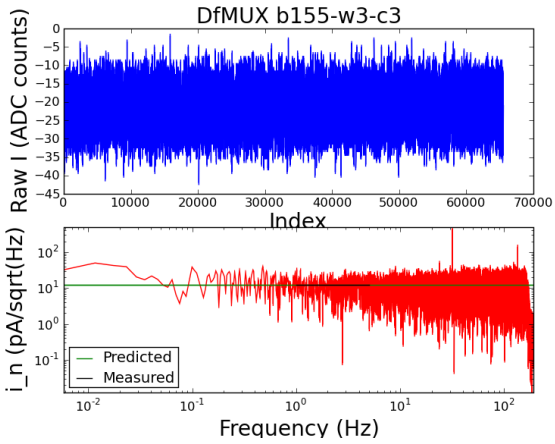
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 726759 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.589
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.71 ohm
R is : 1.71 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.16189717824 pA/sqrt(Hz)
20 ohms noise : 1.81809087749 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.74162036386 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.18086617776 pA/sqrt(Hz)
Carrier shot noise : 2.60269580591 pA/sqrt(Hz)
Carrier digitization noise : 0.257563300453 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.88751659112 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.95852373938 pA/sqrt(Hz)

Predicted noise : 12.3045352872 pA/sqrt(Hz)
Measured noise : 12.1161682338 pA/sqrt(Hz)
Standard deviation : 6.27858908116 pA/sqrt(Hz)
Measured/predicted : 0.984691250091



b155-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

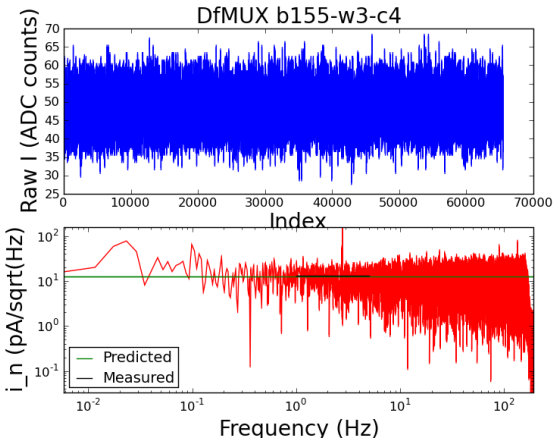
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 802038 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.523
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.69 ohm
R is : 1.69 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.22982235749 pA/sqrt(Hz)
20 ohms noise : 1.85714785556 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.84348180812 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.20667524496 pA/sqrt(Hz)
Carrier shot noise : 2.61805107663 pA/sqrt(Hz)
Carrier digitization noise : 0.260611386849 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.72093198151 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.99957733297 pA/sqrt(Hz)

Predicted noise : 12.3607999808 pA/sqrt(Hz)
Measured noise : 12.9960109283 pA/sqrt(Hz)
Standard deviation : 9.14524440765 pA/sqrt(Hz)
Measured/predicted : 1.0513891454



b155-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

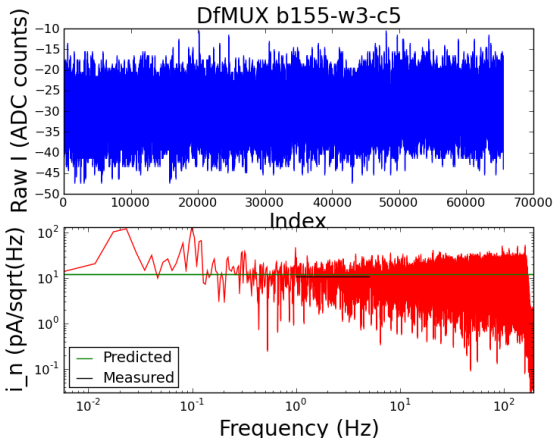
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 893481 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.461
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.75 ohm
R is : 1.75 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.31903988369 pA/sqrt(Hz)
20 ohms noise : 1.90844793312 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 4.97727352087 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.13101780799 pA/sqrt(Hz)
Carrier shot noise : 2.57277876827 pA/sqrt(Hz)
Carrier digitization noise : 0.2516761393 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.55456703494 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.87853805065 pA/sqrt(Hz)

Predicted noise : 12.318910189 pA/sqrt(Hz)
Measured noise : 10.8938840885 pA/sqrt(Hz)
Standard deviation : 5.77127839303 pA/sqrt(Hz)
Measured/predicted : 0.884322064318



b155-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

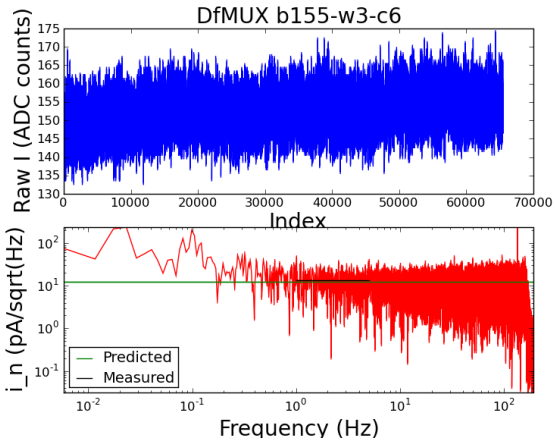
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

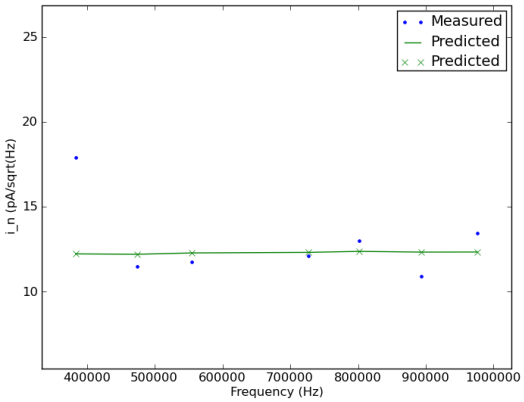
Demod gain is : 2
Demod frequency is : 976395 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.423
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.79 ohm
R is : 1.79 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.4058141093 pA/sqrt(Hz)
20 ohms noise : 1.95834311285 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.61280717535 pA/sqrt(Hz)
Current bias shot noise : 5.10740122967 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.08339729831 pA/sqrt(Hz)
Carrier shot noise : 2.54387022408 pA/sqrt(Hz)
Carrier digitization noise : 0.246052091494 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.44701721449 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.80124865302 pA/sqrt(Hz)

Predicted noise : 12.3246782278 pA/sqrt(Hz)
Measured noise : 13.4447298538 pA/sqrt(Hz)
Standard deviation : 7.27223191034 pA/sqrt(Hz)
Measured/predicted : 1.09087877227



b155-w3


Measured
Predicted
Predicted
25
20
15
10
i_n (pA/sqrt(Hz)
400000
500000
600000
700000
800000
900000
1000000
Frequency (Hz)

b156-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

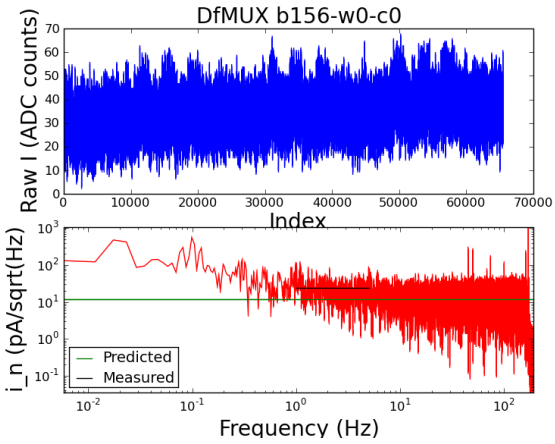
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 428289 Hz
Carrier gain is : 2
Carrier amplitude : 1.07
Nuller gain is : 2
Nuller amplitude : 0.515
Voltage bias is : 5.69668 uV_RMS
R normal is : 1.62 ohm
R is : 1.296 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.48 K
T_bath is : 0.75 K
G is guessed : 45.3586556297 pW/K
γ : 0.498

Dark bolo in transition
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 2.94867580559 pA/sqrt(Hz)
20 ohms noise : 1.69548858821 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.31665043503 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.87753176233 pA/sqrt(Hz)
Carrier shot noise : 2.37184549333 pA/sqrt(Hz)
Carrier digitization noise : 0.339840465876 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.70004159968 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.39444203108 pA/sqrt(Hz)
Phonon noise : 2.97532019617 pA/sqrt(Hz)

Predicted noise : 12.1273284115 pA/sqrt(Hz)
Measured noise : 24.2244972676 pA/sqrt(Hz)
Standard deviation : 15.0856000306 pA/sqrt(Hz)
Measured/predicted : 1.99751309156



b156-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

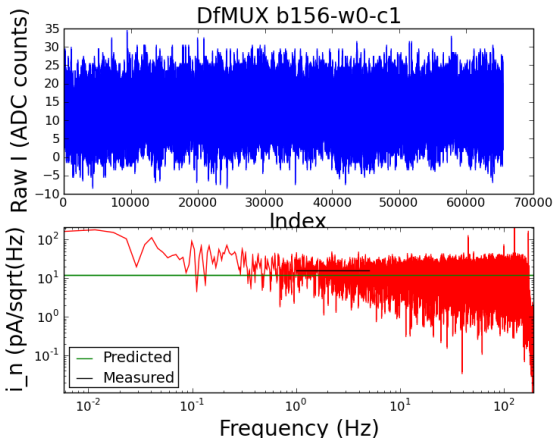
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 516456 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.533
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.64 ohm
R is : 1.64 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.00163489855 pA/sqrt(Hz)
20 ohms noise : 1.72594006667 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.3941787585 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.27395192925 pA/sqrt(Hz)
Carrier shot noise : 2.65766075545 pA/sqrt(Hz)
Carrier digitization noise : 0.26855685596 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.74682154644 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 7.10547710418 pA/sqrt(Hz)

Predicted noise : 12.1430119786 pA/sqrt(Hz)
Measured noise : 15.7942499366 pA/sqrt(Hz)
Standard deviation : 7.91190276835 pA/sqrt(Hz)
Measured/predicted : 1.30068635067



b156-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

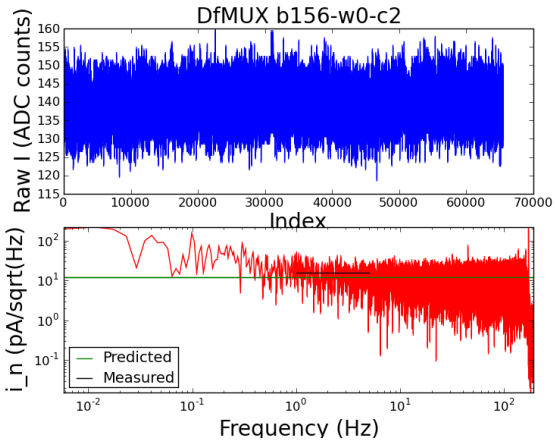
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 600951 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.484
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.72 ohm
R is : 1.72 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.06051531302 pA/sqrt(Hz)
20 ohms noise : 1.75979630499 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.48037547306 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.16818672324 pA/sqrt(Hz)
Carrier shot noise : 2.59511880058 pA/sqrt(Hz)
Carrier digitization noise : 0.256065839404 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.6175170647 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.93826598537 pA/sqrt(Hz)

Predicted noise : 12.0351923237 pA/sqrt(Hz)
Measured noise : 15.6107113237 pA/sqrt(Hz)
Standard deviation : 8.22531119285 pA/sqrt(Hz)
Measured/predicted : 1.29708864668



b156-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

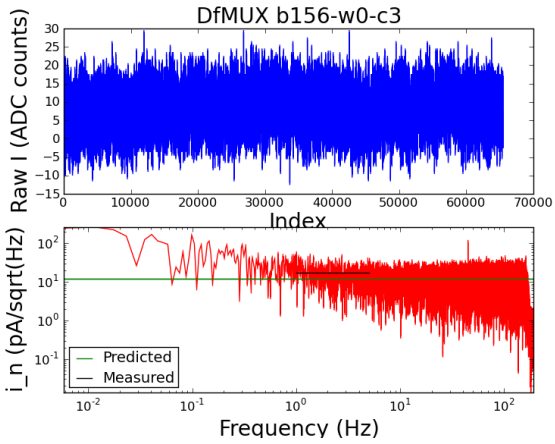
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 680790 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.463
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.71 ohm
R is : 1.71 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.12303200452 pA/sqrt(Hz)
20 ohms noise : 1.7957434026 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.57189543706 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.18086617776 pA/sqrt(Hz)
Carrier shot noise : 2.60269580591 pA/sqrt(Hz)
Carrier digitization noise : 0.257563300453 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.56010239795 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.95852373938 pA/sqrt(Hz)

Predicted noise : 12.094141024 pA/sqrt(Hz)
Measured noise : 16.9888388394 pA/sqrt(Hz)
Standard deviation : 9.06990310587 pA/sqrt(Hz)
Measured/predicted : 1.40471644953



b156-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

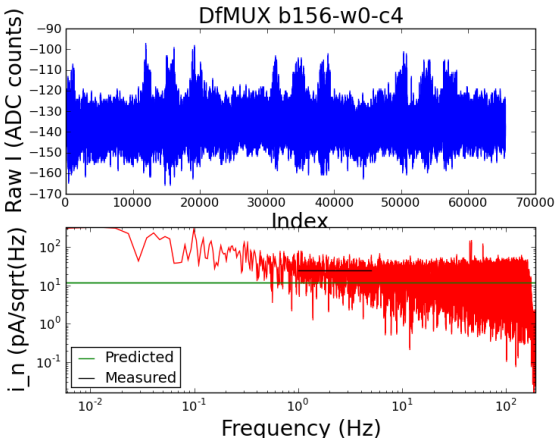
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 779313 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.541
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.77 ohm
R is : 1.77 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.2087734069 pA/sqrt(Hz)
20 ohms noise : 1.84504470897 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.69741471631 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.10693851072 pA/sqrt(Hz)
Carrier shot noise : 2.55820200071 pA/sqrt(Hz)
Carrier digitization noise : 0.248832341116 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.76735881591 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.83956585003 pA/sqrt(Hz)

Predicted noise : 12.1270705423 pA/sqrt(Hz)
Measured noise : 24.2104333236 pA/sqrt(Hz)
Standard deviation : 12.5316277323 pA/sqrt(Hz)
Measured/predicted : 1.99639585167



b156-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

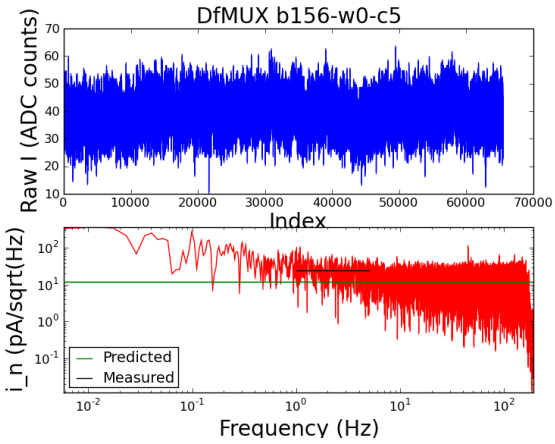
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 861942 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.502
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.76 ohm
R is : 1.76 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.28747167245 pA/sqrt(Hz)
20 ohms noise : 1.89029621166 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.81262334711 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.11890975226 pA/sqrt(Hz)
Carrier shot noise : 2.56545932594 pA/sqrt(Hz)
Carrier digitization noise : 0.250246161236 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.66574559026 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.85896891271 pA/sqrt(Hz)

Predicted noise : 12.1919624348 pA/sqrt(Hz)
Measured noise : 24.2435679572 pA/sqrt(Hz)
Standard deviation : 13.5455604237 pA/sqrt(Hz)
Measured/predicted : 1.98848775058



b156-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

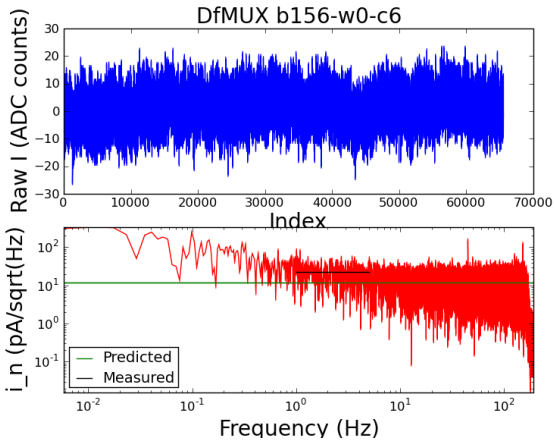
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 2
Demod frequency is : 947364 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 0.457
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.86 ohm
R is : 1.86 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.37482526013 pA/sqrt(Hz)
20 ohms noise : 1.94052452458 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 4.94050275032 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 2.00498987311 pA/sqrt(Hz)
Carrier shot noise : 2.49554264288 pA/sqrt(Hz)
Carrier digitization noise : 0.236792066546 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 2.54346016914 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.67204084462 pA/sqrt(Hz)

Predicted noise : 12.11069909 pA/sqrt(Hz)
Measured noise : 22.3078576661 pA/sqrt(Hz)
Standard deviation : 12.0777896579 pA/sqrt(Hz)
Measured/predicted : 1.84199586665



b156-w0-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

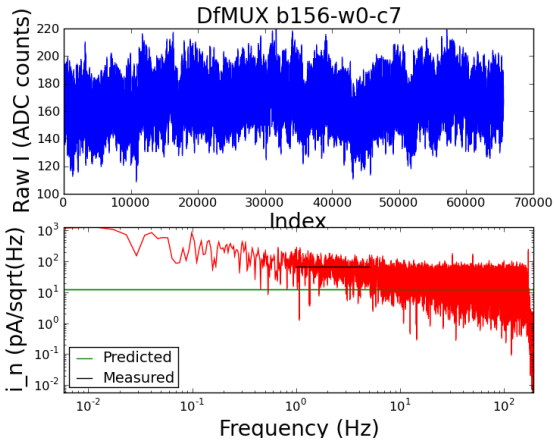
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

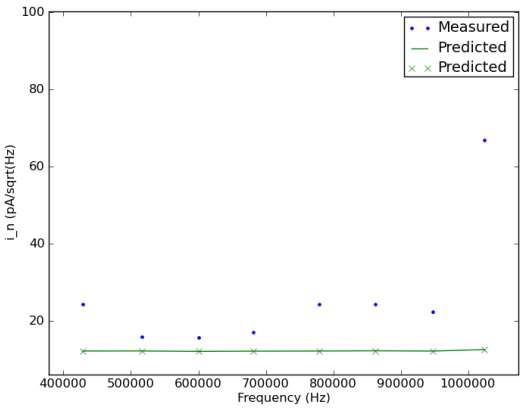
Demod gain is : 2
Demod frequency is : 1024209 Hz
Carrier gain is : 2
Carrier amplitude : 1.7
Nuller gain is : 2
Nuller amplitude : 1.203
Voltage bias is : 9.0508 uV_RMS
R normal is : 1.95 ohm
R is : 1.95 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 6.70153808594 V
Leadlag R : 10 ohm
Optical loading : 0.0 pW
Frequency band : 0 GHz
Tc is : 0.75 K
T_bath is : 0.75 K
G is guessed : -1.0 pW/K
γ : 0.498

Dark bolo overbiased
SQUID noise : 3.53553390593 pA/sqrt(Hz)
SQUID ctrl 1st stage noise : 3.45821537038 pA/sqrt(Hz)
20 ohms noise : 1.98847383797 pA/sqrt(Hz)
Feedback resistor noise : 1.81971212009 pA/sqrt(Hz)
SQUID ctrl 2nd stage noise : 0.183847763109 pA/sqrt(Hz)
Flux bias 50kOhm noise : 0.820243866176 pA/sqrt(Hz)
Flux bias shot noise : 1.07572950016 pA/sqrt(Hz)
Current bias shot noise : 5.0625799061 pA/sqrt(Hz)
Demod digitization stage noise : 0.00810783178394 pA/sqrt(Hz)
Carrier 1st stage noise : 1.76776695297 pA/sqrt(Hz)
Carrier 2nd stage noise : 0.459572267319 pA/sqrt(Hz)
50 Ohm bolo termination noise : 0.735391052434 pA/sqrt(Hz)
30mOhm resistor noise : 1.91245187896 pA/sqrt(Hz)
Carrier shot noise : 2.43727291206 pA/sqrt(Hz)
Carrier digitization noise : 0.225863201936 pA/sqrt(Hz)
Nuller 1st stage noise : 3.59302226213 pA/sqrt(Hz)
Nuller 2nd stage noise : 0.934185788153 pA/sqrt(Hz)
4x820 Ohm resitors noise : 3.11126983722 pA/sqrt(Hz)
Nuller shot noise : 4.12666918083 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.51625187217 pA/sqrt(Hz)

Predicted noise : 12.5099559194 pA/sqrt(Hz)
Measured noise : 66.7811724151 pA/sqrt(Hz)
Standard deviation : 37.5795213229 pA/sqrt(Hz)
Measured/predicted : 5.33824202461



b156-w0


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz))
Frequency (Hz)
100
80
60
40
20
400000
500000
600000
700000
800000
900000
1000000