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

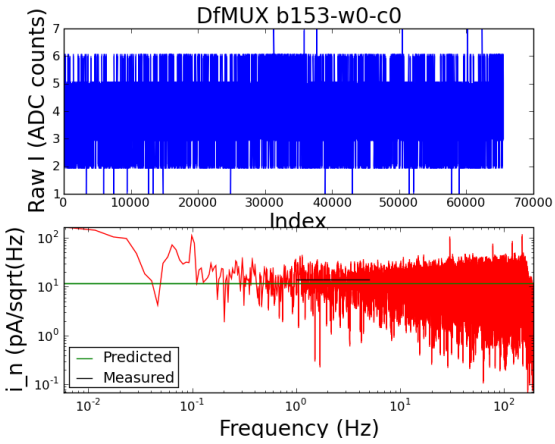
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 522177 Hz
Carrier gain is : 2
Carrier amplitude : 1.18
Nuller gain is : 2
Nuller amplitude : 0.486
Voltage bias is : 6.28232 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 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 : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.34833066043 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.62291958245 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.6979598389 pA/sqrt(Hz)

Predicted noise : 11.758584873 pA/sqrt(Hz)
Measured noise : 14.2686141245 pA/sqrt(Hz)
Standard deviation : 7.39572367915 pA/sqrt(Hz)
Measured/predicted : 1.21346354843



b153-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

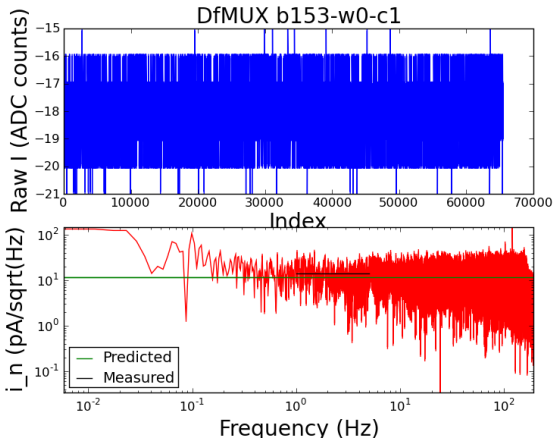
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 616488 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.477
Voltage bias is : 6.655 uV_RMS
R normal is : 1.69 ohm
R is : 1.521 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 : 3.07217064754 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 : 0.0567548224876 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 : 2.45186138329 pA/sqrt(Hz)
Carrier shot noise : 2.36639591102 pA/sqrt(Hz)
Carrier digitization noise : 0.28956820761 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 : 2.59851980019 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.90256187485 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.6912463166 pA/sqrt(Hz)
Measured noise : 14.1294462718 pA/sqrt(Hz)
Standard deviation : 8.02257148747 pA/sqrt(Hz)
Measured/predicted : 1.20854919049



b153-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

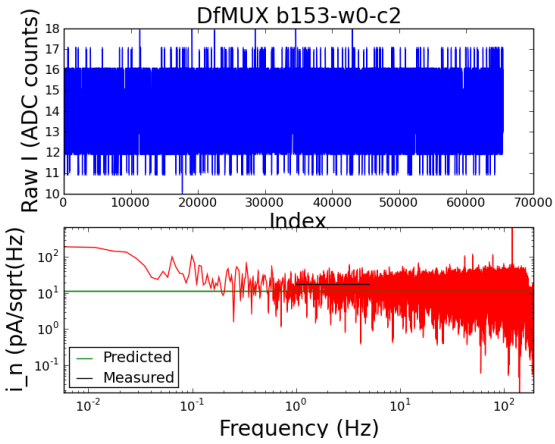
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 707700 Hz
Carrier gain is : 2
Carrier amplitude : 1.32
Nuller gain is : 2
Nuller amplitude : 0.496
Voltage bias is : 7.02768 uV_RMS
R normal is : 1.75 ohm
R is : 1.575 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 : 3.14553639666 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 : 0.0567548224876 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 : 2.36779756443 pA/sqrt(Hz)
Carrier shot noise : 2.38970170417 pA/sqrt(Hz)
Carrier digitization noise : 0.279640154778 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 : 2.64976695126 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.80049258992 pA/sqrt(Hz)
Phonon noise : 2.41181258326 pA/sqrt(Hz)

Predicted noise : 11.6726116464 pA/sqrt(Hz)
Measured noise : 17.6370365281 pA/sqrt(Hz)
Standard deviation : 9.71845642505 pA/sqrt(Hz)
Measured/predicted : 1.51097604052



b153-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

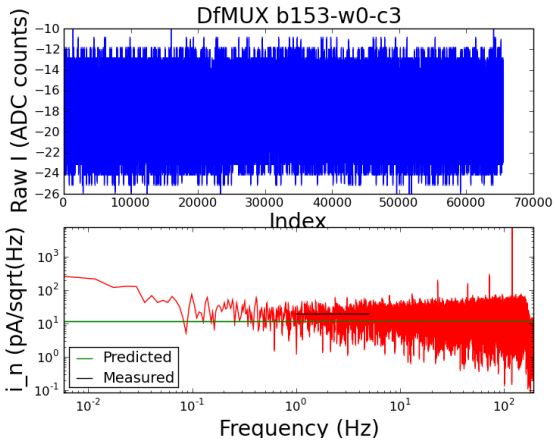
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 787827 Hz
Carrier gain is : 2
Carrier amplitude : 1.21
Nuller gain is : 2
Nuller amplitude : 0.553
Voltage bias is : 6.44204 uV_RMS
R normal is : 1.72 ohm
R is : 1.548 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 : 3.21660537278 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 : 0.0567548224876 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 : 2.40909635916 pA/sqrt(Hz)
Carrier shot noise : 2.30783212126 pA/sqrt(Hz)
Carrier digitization noise : 0.284517599338 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 : 2.797882079 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.85085960689 pA/sqrt(Hz)
Phonon noise : 2.63106827264 pA/sqrt(Hz)

Predicted noise : 11.8326556014 pA/sqrt(Hz)
Measured noise : 19.4862724886 pA/sqrt(Hz)
Standard deviation : 10.0201879078 pA/sqrt(Hz)
Measured/predicted : 1.64682157116



b153-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

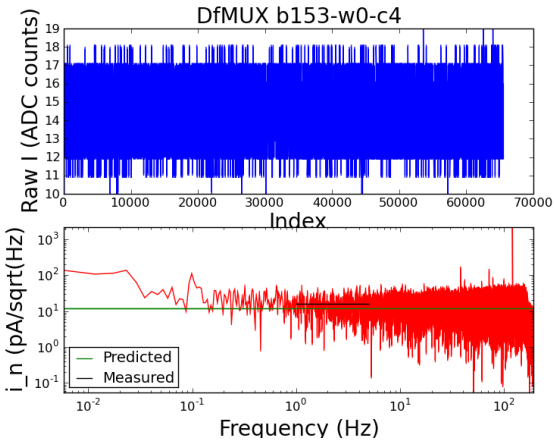
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 847089 Hz
Carrier gain is : 2
Carrier amplitude : 1.18
Nuller gain is : 2
Nuller amplitude : 0.49
Voltage bias is : 6.28232 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 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 : 3.2728913627 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 : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.37038119735 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.63369137144 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.6979598389 pA/sqrt(Hz)

Predicted noise : 12.0307309063 pA/sqrt(Hz)
Measured noise : 16.1161304242 pA/sqrt(Hz)
Standard deviation : 8.81668026042 pA/sqrt(Hz)
Measured/predicted : 1.33958032556



b153-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

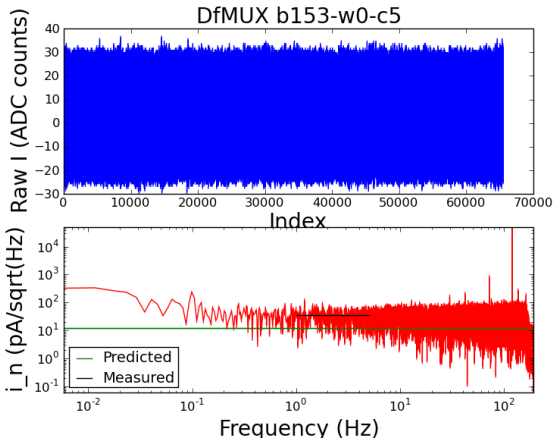
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 958239 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.579
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.79 ohm
R is : 1.611 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 : 3.38635879336 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 : 0.0567548224876 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 : 2.31488588701 pA/sqrt(Hz)
Carrier shot noise : 2.35388306488 pA/sqrt(Hz)
Carrier digitization noise : 0.273391212772 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 : 2.86289963219 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.73531644712 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.8901273468 pA/sqrt(Hz)
Measured noise : 34.3397542448 pA/sqrt(Hz)
Standard deviation : 17.4815220315 pA/sqrt(Hz)
Measured/predicted : 2.88808969351



b153-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

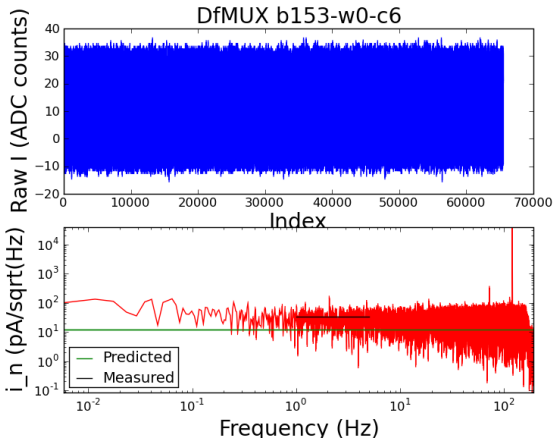
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

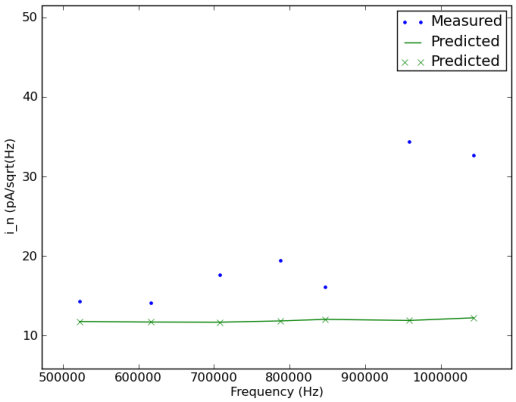
Demod gain is : 1
Demod frequency is : 1043505 Hz
Carrier gain is : 2
Carrier amplitude : 1.48
Nuller gain is : 2
Nuller amplitude : 1.117
Voltage bias is : 7.87952 uV_RMS
R normal is : 1.83 ohm
R is : 1.647 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.159606933594 V
SQUID current bias : 5.84661865234 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 : 3.47982732164 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 : 0.0567548224876 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 : 2.26428728839 pA/sqrt(Hz)
Carrier shot noise : 2.47446357292 pA/sqrt(Hz)
Carrier digitization noise : 0.267415448558 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 : 3.97643078552 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.67228907832 pA/sqrt(Hz)
Phonon noise : 2.15107608777 pA/sqrt(Hz)

Predicted noise : 12.2226934345 pA/sqrt(Hz)
Measured noise : 32.6465011852 pA/sqrt(Hz)
Standard deviation : 20.4920602362 pA/sqrt(Hz)
Measured/predicted : 2.67097439367



b153-w0


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
50
40
30
20
10
500000
600000
700000
800000
900000
1000000

b153-w1-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

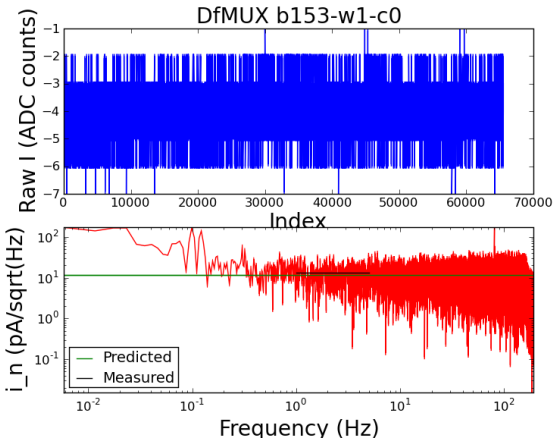
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 385119 Hz
Carrier gain is : 2
Carrier amplitude : 1.15
Nuller gain is : 2
Nuller amplitude : 0.483
Voltage bias is : 6.1226 uV_RMS
R normal is : 1.53 ohm
R is : 1.377 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 2.92605202897 pA/sqrt(Hz)
20 ohms noise : 1.68247991666 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 3.93197511315 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.70826518807 pA/sqrt(Hz)
Carrier shot noise : 2.38549745077 pA/sqrt(Hz)
Carrier digitization noise : 0.319849850236 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 : 2.61481161998 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.20351997907 pA/sqrt(Hz)
Phonon noise : 2.76834139991 pA/sqrt(Hz)

Predicted noise : 11.8265616898 pA/sqrt(Hz)
Measured noise : 13.0061837542 pA/sqrt(Hz)
Standard deviation : 6.99263483692 pA/sqrt(Hz)
Measured/predicted : 1.09974344998



b153-w1-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

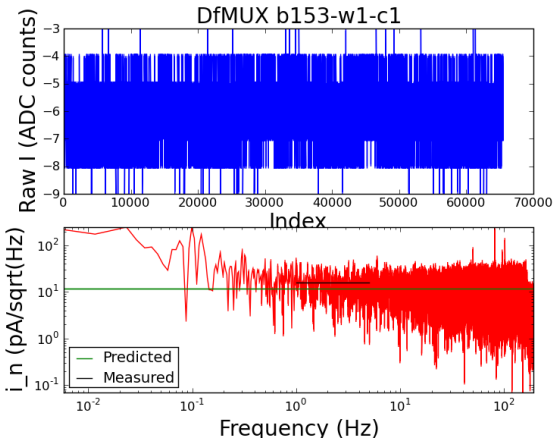
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 465744 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.478
Voltage bias is : 6.655 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 2.97008387373 pA/sqrt(Hz)
20 ohms noise : 1.70779822739 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 3.99114429951 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.44738455554 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.60124218942 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.7495489875 pA/sqrt(Hz)
Measured noise : 16.2080590681 pA/sqrt(Hz)
Standard deviation : 8.60234195594 pA/sqrt(Hz)
Measured/predicted : 1.37946223173



b153-w1-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

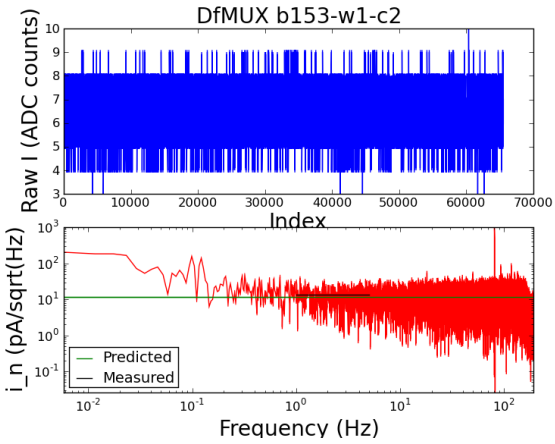
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 555522 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.456
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 3.02789801502 pA/sqrt(Hz)
20 ohms noise : 1.74104135864 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 4.06883388346 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.48972516239 pA/sqrt(Hz)
Carrier digitization noise : 0.305856419288 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 : 2.54067586599 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.739567721 pA/sqrt(Hz)
Measured noise : 13.4472899522 pA/sqrt(Hz)
Standard deviation : 7.00856829664 pA/sqrt(Hz)
Measured/predicted : 1.14546721581



b153-w1-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

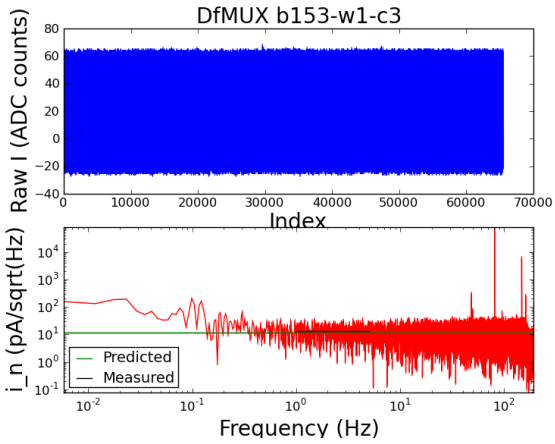
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 630972 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.419
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.54 ohm
R is : 1.386 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 3.08326123101 pA/sqrt(Hz)
20 ohms noise : 1.77287520783 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 4.14322995888 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.69067905049 pA/sqrt(Hz)
Carrier shot noise : 2.53776287293 pA/sqrt(Hz)
Carrier digitization noise : 0.317772903157 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 : 2.43541991123 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.18334587693 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.856236087 pA/sqrt(Hz)
Measured noise : 13.3252344289 pA/sqrt(Hz)
Standard deviation : 7.14346761514 pA/sqrt(Hz)
Measured/predicted : 1.1239009017



b153-w1-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

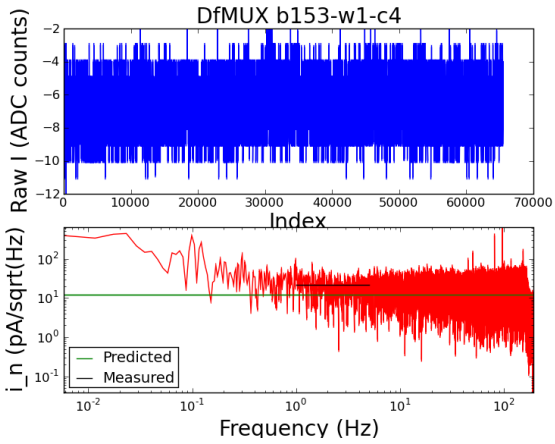
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 807411 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 0.566
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 3.23486617823 pA/sqrt(Hz)
20 ohms noise : 1.86004805248 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 4.34695390965 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.35826022125 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.83057754107 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 11.9763338661 pA/sqrt(Hz)
Measured noise : 21.3658510859 pA/sqrt(Hz)
Standard deviation : 11.2994719541 pA/sqrt(Hz)
Measured/predicted : 1.78400596749



b153-w1-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

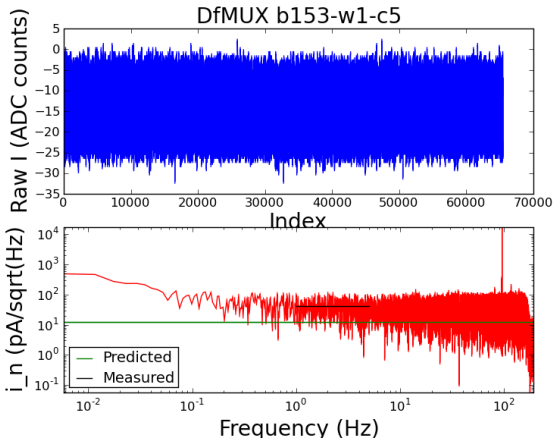
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 894153 Hz
Carrier gain is : 2
Carrier amplitude : 1.32
Nuller gain is : 2
Nuller amplitude : 1.383
Voltage bias is : 7.02768 uV_RMS
R normal is : 1.73 ohm
R is : 1.557 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 3.31972136917 pA/sqrt(Hz)
20 ohms noise : 1.90883978727 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 4.46098076075 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.39517094668 pA/sqrt(Hz)
Carrier shot noise : 2.40347531509 pA/sqrt(Hz)
Carrier digitization noise : 0.282872988937 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 : 4.42463989586 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.83392510073 pA/sqrt(Hz)
Phonon noise : 2.41181258326 pA/sqrt(Hz)

Predicted noise : 12.3486631275 pA/sqrt(Hz)
Measured noise : 41.0902228234 pA/sqrt(Hz)
Standard deviation : 22.2515728548 pA/sqrt(Hz)
Measured/predicted : 3.32750374669



b153-w1-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

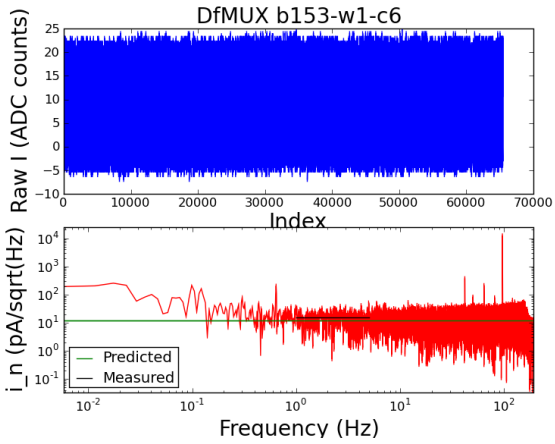
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

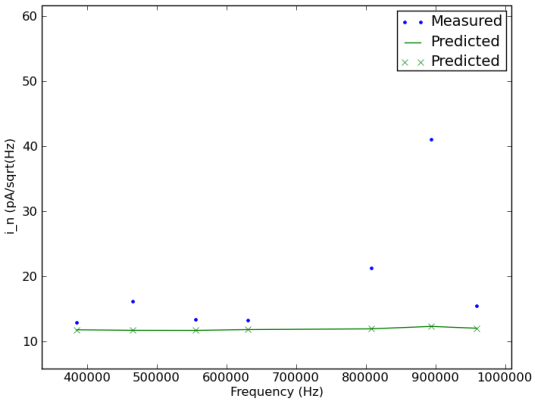
Demod gain is : 1
Demod frequency is : 958884 Hz
Carrier gain is : 2
Carrier amplitude : 1.37
Nuller gain is : 2
Nuller amplitude : 0.459
Voltage bias is : 7.29388 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.174987792969 V
SQUID current bias : 5.64666748047 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 : 3.38704568559 pA/sqrt(Hz)
20 ohms noise : 1.94755126921 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 : 1.49671598108 pA/sqrt(Hz)
Current bias shot noise : 4.55144994381 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.56216734705 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.54901965155 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.3237902262 pA/sqrt(Hz)

Predicted noise : 12.0658572262 pA/sqrt(Hz)
Measured noise : 15.4776711817 pA/sqrt(Hz)
Standard deviation : 8.42637577498 pA/sqrt(Hz)
Measured/predicted : 1.28276598103



b153-w1


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
60
50
40
30
20
10
400000
500000
600000
700000
800000
900000
1000000

b153-w2-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

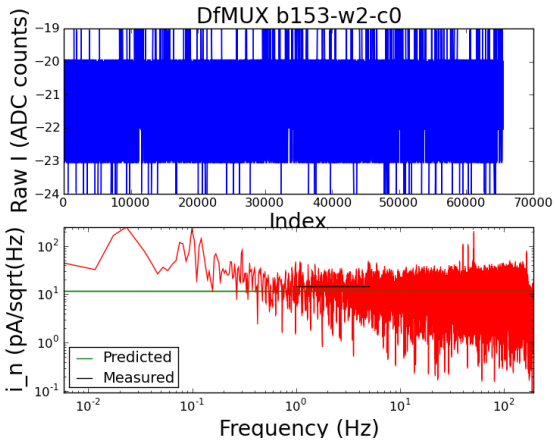
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 429708 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.48
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.57 ohm
R is : 1.413 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 2.9494569903 pA/sqrt(Hz)
20 ohms noise : 1.69593776942 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 3.98809015367 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.63926480112 pA/sqrt(Hz)
Carrier shot noise : 2.36512947497 pA/sqrt(Hz)
Carrier digitization noise : 0.311700809466 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 : 6.1239843822 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.8155815995 pA/sqrt(Hz)
Measured noise : 14.7680761639 pA/sqrt(Hz)
Standard deviation : 7.82176826597 pA/sqrt(Hz)
Measured/predicted : 1.24988144168



b153-w2-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

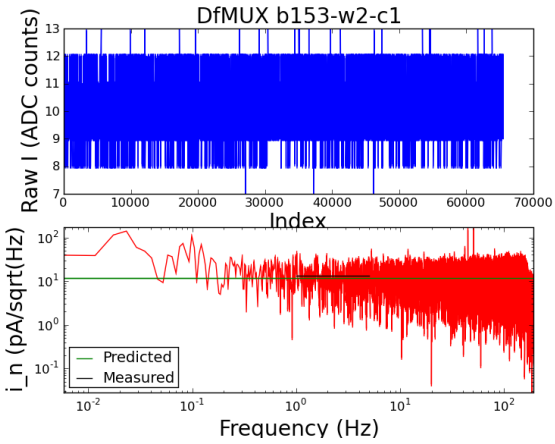
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 521151 Hz
Carrier gain is : 2
Carrier amplitude : 1.23
Nuller gain is : 2
Nuller amplitude : 0.476
Voltage bias is : 6.54852 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.00470227634 pA/sqrt(Hz)
20 ohms noise : 1.72770380889 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.06278972786 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.42008012816 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.58828667471 pA/sqrt(Hz)

Predicted noise : 11.8055987592 pA/sqrt(Hz)
Measured noise : 13.4721772785 pA/sqrt(Hz)
Standard deviation : 7.55928458753 pA/sqrt(Hz)
Measured/predicted : 1.14116848736



b153-w2-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

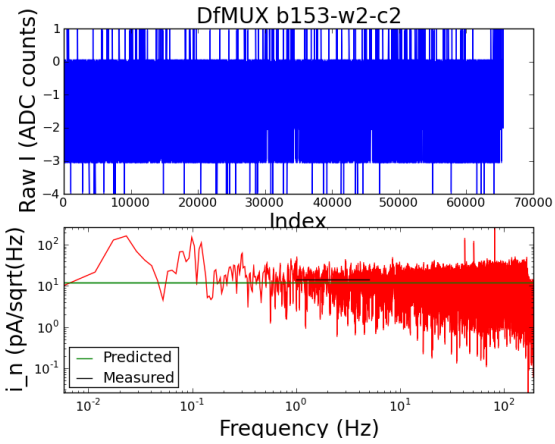
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 590148 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.434
Voltage bias is : 6.655 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.05256017012 pA/sqrt(Hz)
20 ohms noise : 1.75522209782 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.127500485 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.43967623858 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.4786300216 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.8142254663 pA/sqrt(Hz)
Measured noise : 14.1017358371 pA/sqrt(Hz)
Standard deviation : 7.67687578352 pA/sqrt(Hz)
Measured/predicted : 1.1936233888



b153-w2-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

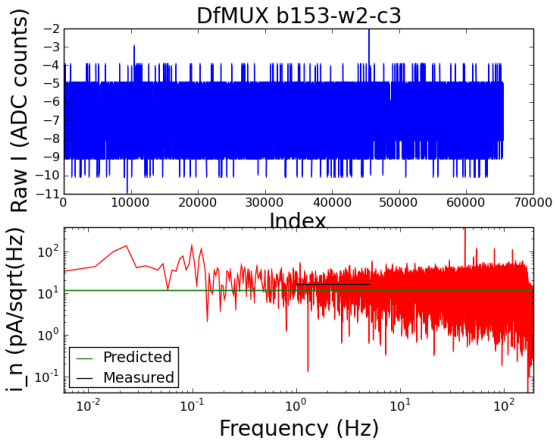
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 695118 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.487
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.68 ohm
R is : 1.512 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.13492665497 pA/sqrt(Hz)
20 ohms noise : 1.80258282661 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.23887182159 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.46645579628 pA/sqrt(Hz)
Carrier shot noise : 2.4297229676 pA/sqrt(Hz)
Carrier digitization noise : 0.291291827894 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 : 2.62561667271 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.92010295921 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.7730694104 pA/sqrt(Hz)
Measured noise : 16.3545555304 pA/sqrt(Hz)
Standard deviation : 8.29146987623 pA/sqrt(Hz)
Measured/predicted : 1.38914967375



b153-w2-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

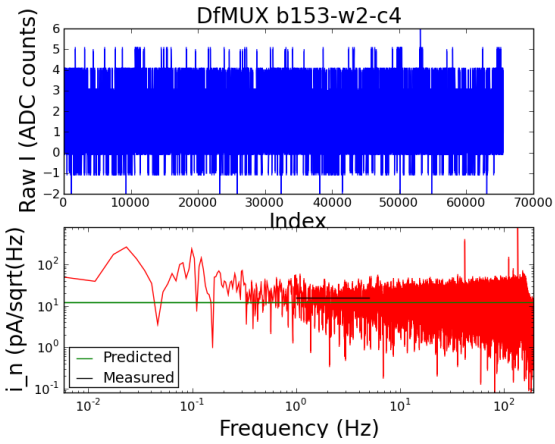
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 761721 Hz
Carrier gain is : 2
Carrier amplitude : 1.09
Nuller gain is : 2
Nuller amplitude : 0.511
Voltage bias is : 5.80316 uV_RMS
R normal is : 1.51 ohm
R is : 1.359 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.19279850938 pA/sqrt(Hz)
20 ohms noise : 1.83585914289 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.31712289407 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.74413625017 pA/sqrt(Hz)
Carrier shot noise : 2.33776325093 pA/sqrt(Hz)
Carrier digitization noise : 0.324086272093 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 : 2.68953556139 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.24446775021 pA/sqrt(Hz)
Phonon noise : 2.92072716504 pA/sqrt(Hz)

Predicted noise : 12.1532198502 pA/sqrt(Hz)
Measured noise : 15.5818026173 pA/sqrt(Hz)
Standard deviation : 8.8792682879 pA/sqrt(Hz)
Measured/predicted : 1.28211311976



b153-w2-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

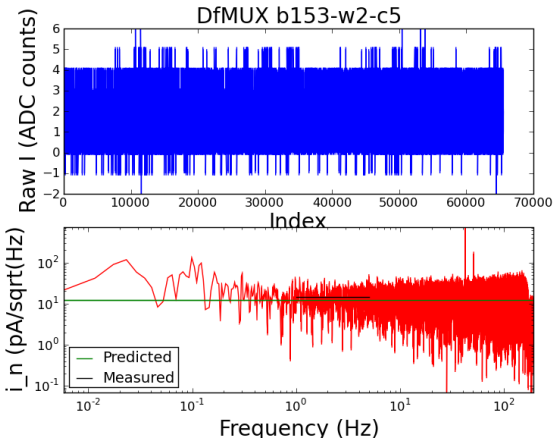
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 830241 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 0.492
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.51 ohm
R is : 1.359 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.25657921611 pA/sqrt(Hz)
20 ohms noise : 1.87253304926 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.40336358493 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.74413625017 pA/sqrt(Hz)
Carrier shot noise : 2.44264728002 pA/sqrt(Hz)
Carrier digitization noise : 0.324086272093 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 : 6.24446775021 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 12.1597330477 pA/sqrt(Hz)
Measured noise : 14.8126142071 pA/sqrt(Hz)
Standard deviation : 7.56795197079 pA/sqrt(Hz)
Measured/predicted : 1.21816935857



b153-w2-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

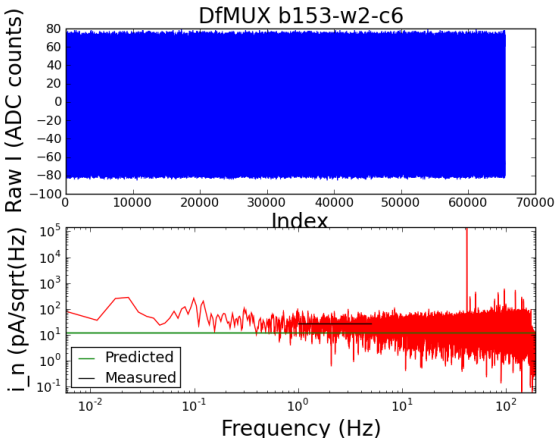
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 944970 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.548
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.66 ohm
R is : 1.494 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.37229846609 pA/sqrt(Hz)
20 ohms noise : 1.939071618 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.55983265804 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.49617213118 pA/sqrt(Hz)
Carrier shot noise : 2.41616557793 pA/sqrt(Hz)
Carrier digitization noise : 0.294801367989 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 : 2.78520470486 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.95565945283 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 12.0471660221 pA/sqrt(Hz)
Measured noise : 27.1231105201 pA/sqrt(Hz)
Standard deviation : 13.9920331215 pA/sqrt(Hz)
Measured/predicted : 2.2514100387



b153-w2-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

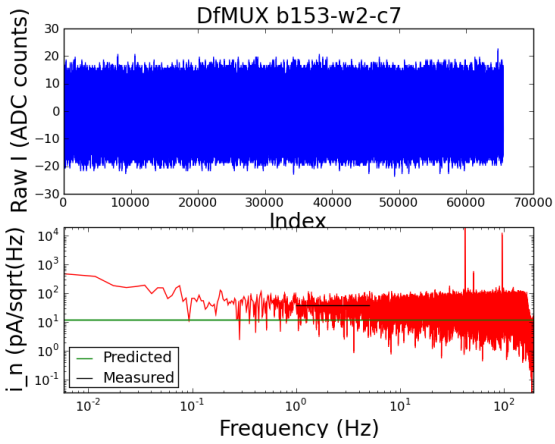
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

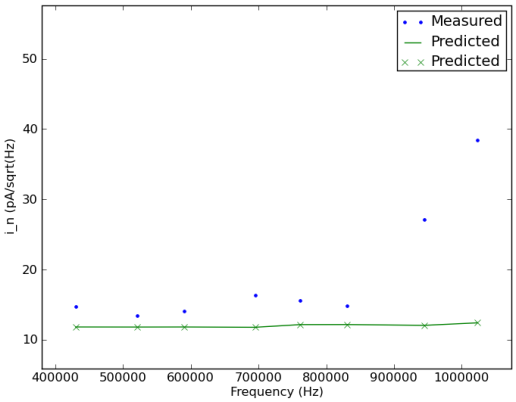
Demod gain is : 1
Demod frequency is : 1023519 Hz
Carrier gain is : 2
Carrier amplitude : 1.5
Nuller gain is : 2
Nuller amplitude : 1.287
Voltage bias is : 7.986 uV_RMS
R normal is : 1.75 ohm
R is : 1.575 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.232666015625 V
SQUID current bias : 5.71716308594 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 : 3.45744742334 pA/sqrt(Hz)
20 ohms noise : 1.98803226842 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 : 1.72584582128 pA/sqrt(Hz)
Current bias shot noise : 4.67496629759 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.36779756443 pA/sqrt(Hz)
Carrier shot noise : 2.54743057603 pA/sqrt(Hz)
Carrier digitization noise : 0.279640154778 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 : 4.26831157626 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.80049258992 pA/sqrt(Hz)
Phonon noise : 2.12239507326 pA/sqrt(Hz)

Predicted noise : 12.4074627876 pA/sqrt(Hz)
Measured noise : 38.4129020701 pA/sqrt(Hz)
Standard deviation : 19.2835796727 pA/sqrt(Hz)
Measured/predicted : 3.09595142276



b153-w2


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
10
20
30
40
50
400000
500000
600000
700000
800000
900000
1000000

b153-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

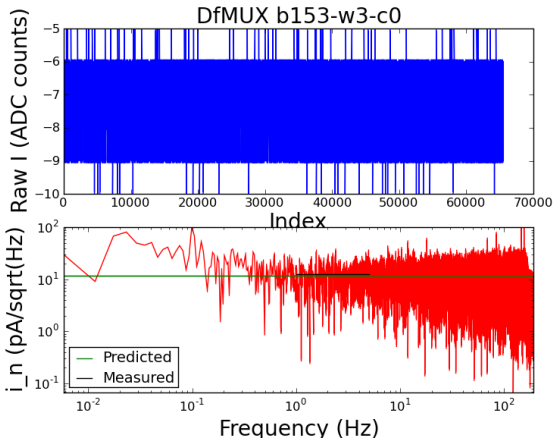
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 380394 Hz
Carrier gain is : 2
Carrier amplitude : 1.21
Nuller gain is : 2
Nuller amplitude : 0.482
Voltage bias is : 6.44204 uV_RMS
R normal is : 1.55 ohm
R is : 1.395 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 : 0.0567548224876 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 : 2.67331983081 pA/sqrt(Hz)
Carrier shot noise : 2.43109868324 pA/sqrt(Hz)
Carrier digitization noise : 0.315722755394 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 : 2.61210337315 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.1633673243 pA/sqrt(Hz)
Phonon noise : 2.63106827264 pA/sqrt(Hz)

Predicted noise : 11.8180576587 pA/sqrt(Hz)
Measured noise : 12.5806606991 pA/sqrt(Hz)
Standard deviation : 6.79147911179 pA/sqrt(Hz)
Measured/predicted : 1.0645286275



b153-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

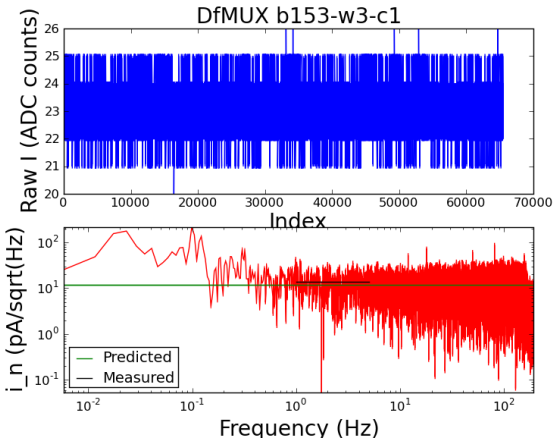
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 469851 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.442
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 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 : 2.97253020886 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 : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.44581289043 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.7090038677 pA/sqrt(Hz)
Measured noise : 13.6882710402 pA/sqrt(Hz)
Standard deviation : 7.41481222018 pA/sqrt(Hz)
Measured/predicted : 1.16903804925



b153-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

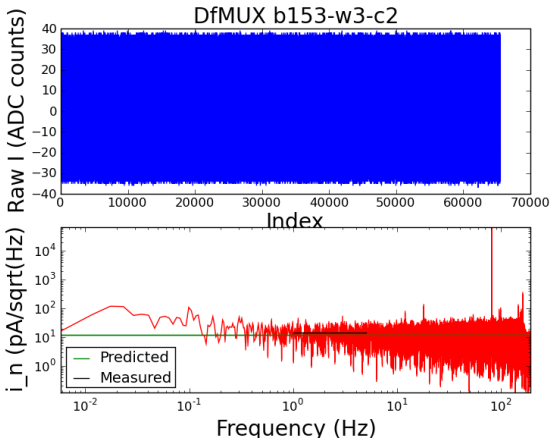
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 631053 Hz
Carrier gain is : 2
Carrier amplitude : 1.21
Nuller gain is : 2
Nuller amplitude : 0.476
Voltage bias is : 6.44204 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 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 : 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 : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.40032404152 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.63106827264 pA/sqrt(Hz)

Predicted noise : 11.8818928383 pA/sqrt(Hz)
Measured noise : 14.0672326144 pA/sqrt(Hz)
Standard deviation : 7.2553337515 pA/sqrt(Hz)
Measured/predicted : 1.18392185536



b153-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

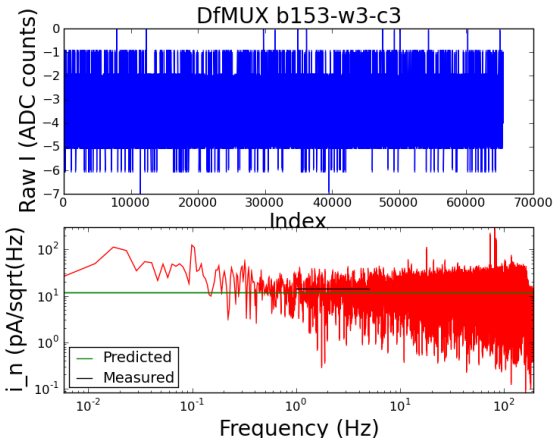
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 710043 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.52
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.56 ohm
R is : 1.404 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 : 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 : 0.0567548224876 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 : 2.65618316523 pA/sqrt(Hz)
Carrier shot noise : 2.37269790863 pA/sqrt(Hz)
Carrier digitization noise : 0.313698891578 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 : 6.14358118231 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 12.0223633889 pA/sqrt(Hz)
Measured noise : 14.5318038957 pA/sqrt(Hz)
Standard deviation : 8.00586125531 pA/sqrt(Hz)
Measured/predicted : 1.20873104777



b153-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

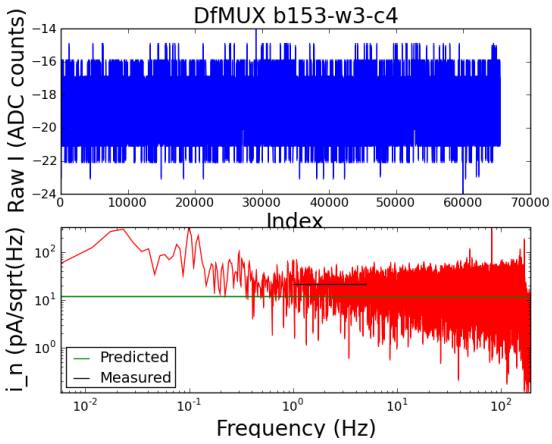
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 811617 Hz
Carrier gain is : 2
Carrier amplitude : 1.29
Nuller gain is : 2
Nuller amplitude : 0.515
Voltage bias is : 6.86796 uV_RMS
R normal is : 1.76 ohm
R is : 1.584 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 : 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 : 0.0567548224876 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 : 2.35434416918 pA/sqrt(Hz)
Carrier shot noise : 2.35566903523 pA/sqrt(Hz)
Carrier digitization noise : 0.278051290262 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 : 5.78399044385 pA/sqrt(Hz)
Phonon noise : 2.46790124798 pA/sqrt(Hz)

Predicted noise : 11.7891502906 pA/sqrt(Hz)
Measured noise : 20.9318333031 pA/sqrt(Hz)
Standard deviation : 11.2724885421 pA/sqrt(Hz)
Measured/predicted : 1.77551670707



b153-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

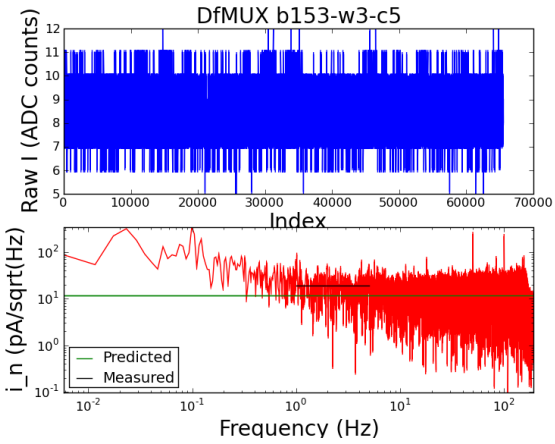
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 874749 Hz
Carrier gain is : 2
Carrier amplitude : 1.37
Nuller gain is : 2
Nuller amplitude : 0.464
Voltage bias is : 7.29388 uV_RMS
R normal is : 1.66 ohm
R is : 1.494 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 : 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 : 0.0567548224876 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 : 2.49617213118 pA/sqrt(Hz)
Carrier shot noise : 2.49966604909 pA/sqrt(Hz)
Carrier digitization noise : 0.294801367989 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 : 2.56286559616 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.95565945283 pA/sqrt(Hz)
Phonon noise : 2.3237902262 pA/sqrt(Hz)

Predicted noise : 11.9274909892 pA/sqrt(Hz)
Measured noise : 18.9858494185 pA/sqrt(Hz)
Standard deviation : 10.9498556527 pA/sqrt(Hz)
Measured/predicted : 1.59177227094



b153-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

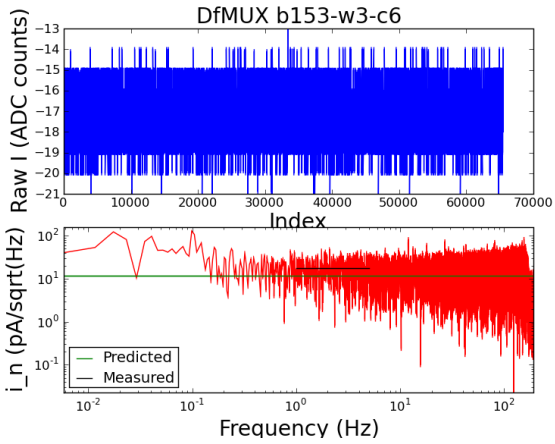
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

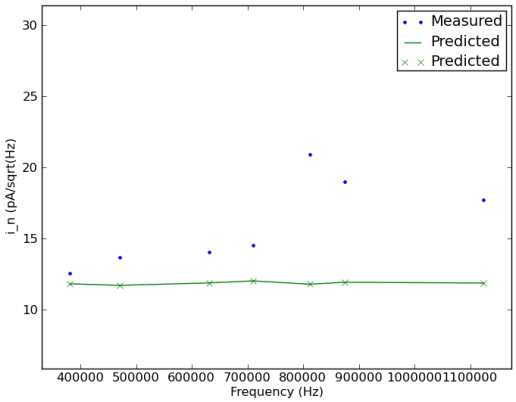
Demod gain is : 1
Demod frequency is : 1123656 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.541
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.99 ohm
R is : 1.791 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.219848632812 V
SQUID current bias : 5.82611083984 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 : 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 : 0.0567548224876 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 : 2.08223403907 pA/sqrt(Hz)
Carrier shot noise : 2.2067554033 pA/sqrt(Hz)
Carrier digitization noise : 0.245914708975 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 : 5.43947972682 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.8714735344 pA/sqrt(Hz)
Measured noise : 17.7294971592 pA/sqrt(Hz)
Standard deviation : 9.64552007039 pA/sqrt(Hz)
Measured/predicted : 1.49345379138



b153-w3


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz))
Frequency (Hz)
30
25
20
15
10
400000
500000
600000
700000
800000
900000
10000001100000

b154-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

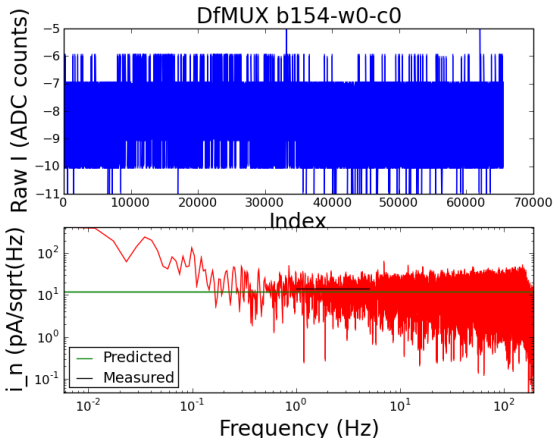
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 427917 Hz
Carrier gain is : 2
Carrier amplitude : 1.15
Nuller gain is : 2
Nuller amplitude : 0.482
Voltage bias is : 6.1226 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 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 : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.34005524233 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.61210337315 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.76834139991 pA/sqrt(Hz)

Predicted noise : 11.775937242 pA/sqrt(Hz)
Measured noise : 14.1578002063 pA/sqrt(Hz)
Standard deviation : 7.21726971143 pA/sqrt(Hz)
Measured/predicted : 1.20226525629



b154-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

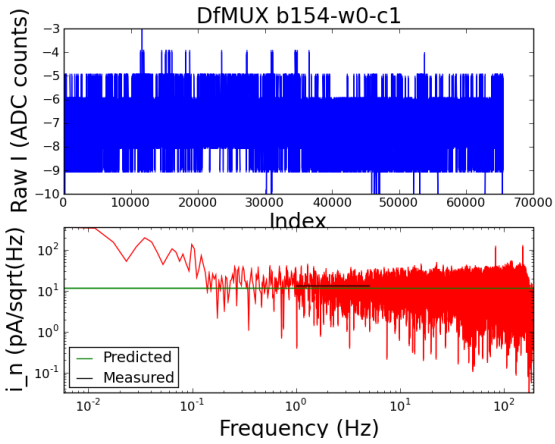
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 512388 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 0.446
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 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 : 2.99899700366 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 : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.34383647603 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 2.51266314814 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 11.7073863581 pA/sqrt(Hz)
Measured noise : 13.4252912023 pA/sqrt(Hz)
Standard deviation : 7.34784635842 pA/sqrt(Hz)
Measured/predicted : 1.14673683704



b154-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

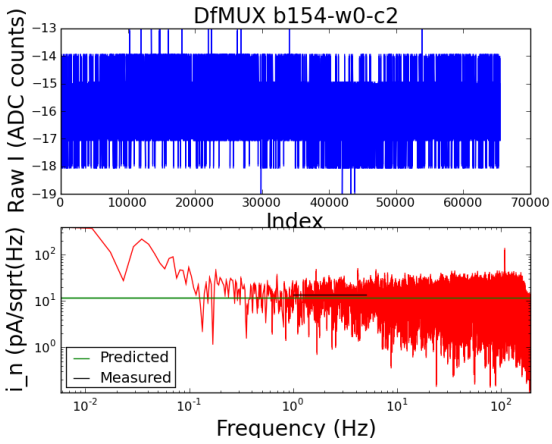
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 588882 Hz
Carrier gain is : 2
Carrier amplitude : 1.29
Nuller gain is : 2
Nuller amplitude : 0.461
Voltage bias is : 6.86796 uV_RMS
R normal is : 1.63 ohm
R is : 1.467 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 : 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 : 0.0567548224876 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 : 2.54211394954 pA/sqrt(Hz)
Carrier shot noise : 2.44780492905 pA/sqrt(Hz)
Carrier digitization noise : 0.300227160038 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 : 6.01021625123 pA/sqrt(Hz)
Phonon noise : 2.46790124798 pA/sqrt(Hz)

Predicted noise : 11.7470689678 pA/sqrt(Hz)
Measured noise : 13.6196221402 pA/sqrt(Hz)
Standard deviation : 7.15705506182 pA/sqrt(Hz)
Measured/predicted : 1.15940599119



b154-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

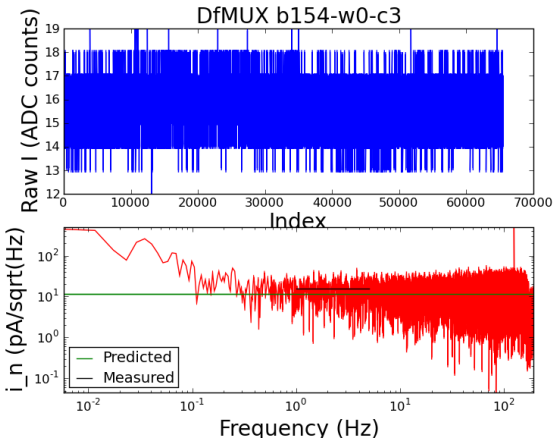
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 679236 Hz
Carrier gain is : 2
Carrier amplitude : 1.3
Nuller gain is : 2
Nuller amplitude : 0.463
Voltage bias is : 6.9212 uV_RMS
R normal is : 1.68 ohm
R is : 1.512 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 : 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 : 0.0567548224876 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 : 2.46645579628 pA/sqrt(Hz)
Carrier shot noise : 2.42043144994 pA/sqrt(Hz)
Carrier digitization noise : 0.291291827894 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 : 5.92010295921 pA/sqrt(Hz)
Phonon noise : 2.44891739223 pA/sqrt(Hz)

Predicted noise : 11.7335988536 pA/sqrt(Hz)
Measured noise : 15.5640680573 pA/sqrt(Hz)
Standard deviation : 8.25006975729 pA/sqrt(Hz)
Measured/predicted : 1.326453056



b154-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

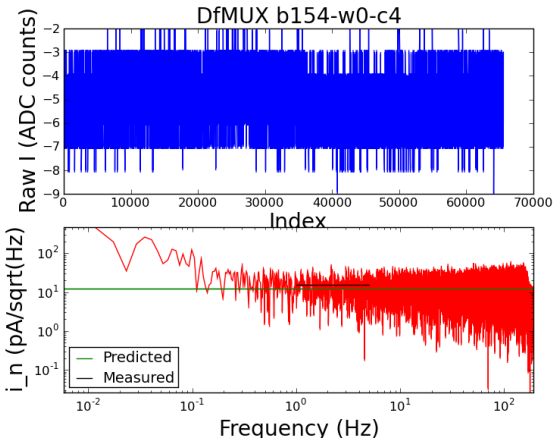
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 758955 Hz
Carrier gain is : 2
Carrier amplitude : 1.14
Nuller gain is : 2
Nuller amplitude : 0.49
Voltage bias is : 6.06936 uV_RMS
R normal is : 1.57 ohm
R is : 1.413 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 : 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 : 0.0567548224876 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 : 2.63926480112 pA/sqrt(Hz)
Carrier shot noise : 2.34465177806 pA/sqrt(Hz)
Carrier digitization noise : 0.311700809466 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 : 2.63369137144 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.1239843822 pA/sqrt(Hz)
Phonon noise : 2.7926250964 pA/sqrt(Hz)

Predicted noise : 12.0079611108 pA/sqrt(Hz)
Measured noise : 15.1420346548 pA/sqrt(Hz)
Standard deviation : 8.24204300469 pA/sqrt(Hz)
Measured/predicted : 1.26099964141



b154-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

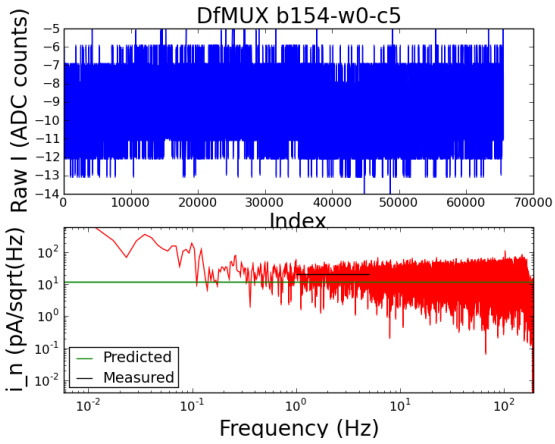
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 859341 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.556
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.72 ohm
R is : 1.548 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 : 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 : 0.0567548224876 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 : 2.40909635916 pA/sqrt(Hz)
Carrier shot noise : 2.37364908041 pA/sqrt(Hz)
Carrier digitization noise : 0.284517599338 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 : 5.85085960689 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.8784971728 pA/sqrt(Hz)
Measured noise : 20.5330076803 pA/sqrt(Hz)
Standard deviation : 10.1565603803 pA/sqrt(Hz)
Measured/predicted : 1.72858631707



b154-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

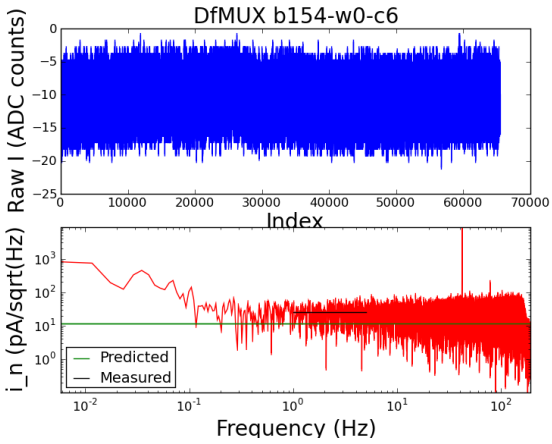
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 946806 Hz
Carrier gain is : 2
Carrier amplitude : 1.36
Nuller gain is : 2
Nuller amplitude : 0.58
Voltage bias is : 7.24064 uV_RMS
R normal is : 1.74 ohm
R is : 1.566 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 : 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 : 0.0567548224876 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 : 2.38140559641 pA/sqrt(Hz)
Carrier shot noise : 2.43259932595 pA/sqrt(Hz)
Carrier digitization noise : 0.281247282104 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 : 2.86537084511 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.81713679225 pA/sqrt(Hz)
Phonon noise : 2.34087691904 pA/sqrt(Hz)

Predicted noise : 11.9302433989 pA/sqrt(Hz)
Measured noise : 25.9279486313 pA/sqrt(Hz)
Standard deviation : 12.9635506508 pA/sqrt(Hz)
Measured/predicted : 2.17329586366



b154-w0-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

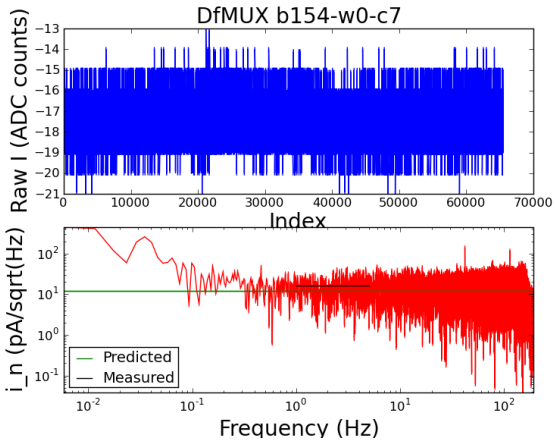
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

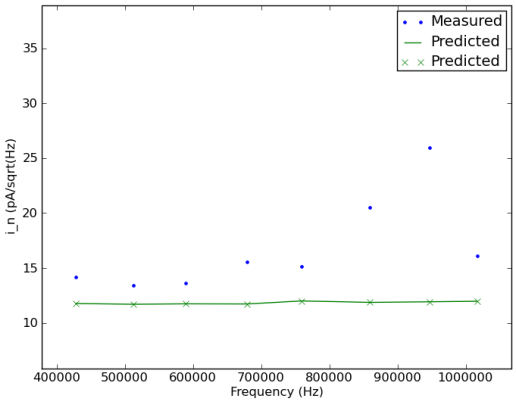
Demod gain is : 1
Demod frequency is : 1016985 Hz
Carrier gain is : 2
Carrier amplitude : 1.47
Nuller gain is : 2
Nuller amplitude : 0.489
Voltage bias is : 7.82628 uV_RMS
R normal is : 1.7 ohm
R is : 1.53 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.249328613281 V
SQUID current bias : 5.52874755859 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 : 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 : 0.0567548224876 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 : 2.43743866927 pA/sqrt(Hz)
Carrier shot noise : 2.55864455794 pA/sqrt(Hz)
Carrier digitization noise : 0.287864865212 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 : 2.63100255872 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.88517579327 pA/sqrt(Hz)
Phonon noise : 2.16570925843 pA/sqrt(Hz)

Predicted noise : 11.9815882572 pA/sqrt(Hz)
Measured noise : 16.135789157 pA/sqrt(Hz)
Standard deviation : 8.5758220981 pA/sqrt(Hz)
Measured/predicted : 1.34671537785



b154-w0


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz))
Frequency (Hz)
35
30
25
20
15
10
400000
500000
600000
700000
800000
900000
1000000

b154-w1-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

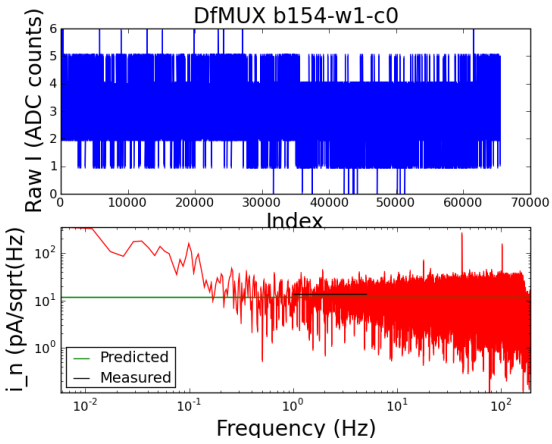
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 371430 Hz
Carrier gain is : 2
Carrier amplitude : 1.17
Nuller gain is : 2
Nuller amplitude : 0.476
Voltage bias is : 6.22908 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 2.91934492474 pA/sqrt(Hz)
20 ohms noise : 1.67862333172 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 3.82375568232 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.3529282908 pA/sqrt(Hz)
Carrier digitization noise : 0.305856419288 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 : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.7210193247 pA/sqrt(Hz)

Predicted noise : 11.687692849 pA/sqrt(Hz)
Measured noise : 13.9301879327 pA/sqrt(Hz)
Standard deviation : 6.85723199174 pA/sqrt(Hz)
Measured/predicted : 1.1918680712



b154-w1-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

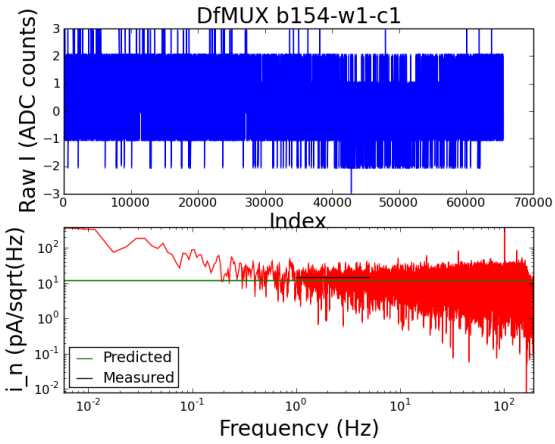
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 455712 Hz
Carrier gain is : 2
Carrier amplitude : 1.26
Nuller gain is : 2
Nuller amplitude : 0.479
Voltage bias is : 6.70824 uV_RMS
R normal is : 1.61 ohm
R is : 1.449 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 2.96419004054 pA/sqrt(Hz)
20 ohms noise : 1.70440927331 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 3.88249377967 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.57369300482 pA/sqrt(Hz)
Carrier shot noise : 2.43415419944 pA/sqrt(Hz)
Carrier digitization noise : 0.303956689976 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 : 6.04743156815 pA/sqrt(Hz)
Phonon noise : 2.52666080151 pA/sqrt(Hz)

Predicted noise : 11.6835132043 pA/sqrt(Hz)
Measured noise : 14.4175362217 pA/sqrt(Hz)
Standard deviation : 7.12579333024 pA/sqrt(Hz)
Measured/predicted : 1.23400692665



b154-w1-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

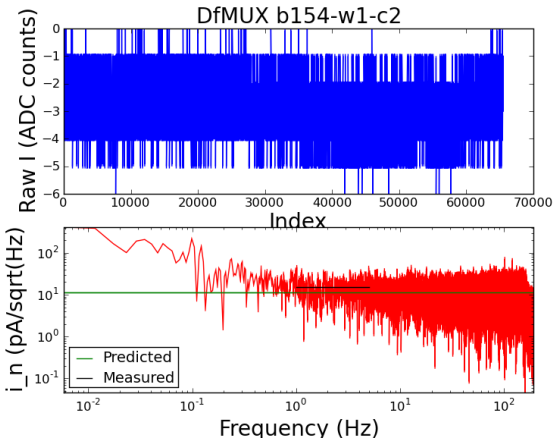
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 552291 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.466
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.69 ohm
R is : 1.521 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 3.02566252855 pA/sqrt(Hz)
20 ohms noise : 1.73975595391 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 3.96301039602 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.45186138329 pA/sqrt(Hz)
Carrier shot noise : 2.42252377261 pA/sqrt(Hz)
Carrier digitization noise : 0.28956820761 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 : 2.56838307423 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.90256187485 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.5998095857 pA/sqrt(Hz)
Measured noise : 15.4833461724 pA/sqrt(Hz)
Standard deviation : 8.04287182301 pA/sqrt(Hz)
Measured/predicted : 1.33479313243



b154-w1-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

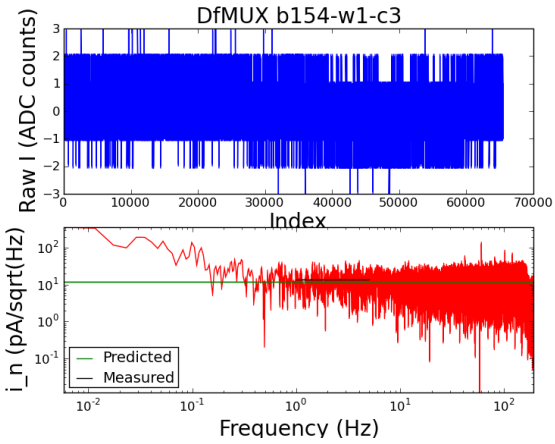
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 624378 Hz
Carrier gain is : 2
Carrier amplitude : 1.3
Nuller gain is : 2
Nuller amplitude : 0.443
Voltage bias is : 6.9212 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 3.07818534218 pA/sqrt(Hz)
20 ohms noise : 1.76995657176 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 4.03180473594 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.48020419 pA/sqrt(Hz)
Carrier digitization noise : 0.3058564192 88 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 : 2.50419822858 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.44891739223 pA/sqrt(Hz)

Predicted noise : 11.7577794304 pA/sqrt(Hz)
Measured noise : 13.6655458604 pA/sqrt(Hz)
Standard deviation : 7.49689072021 pA/sqrt(Hz)
Measured/predicted : 1.16225567432



b154-w1-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

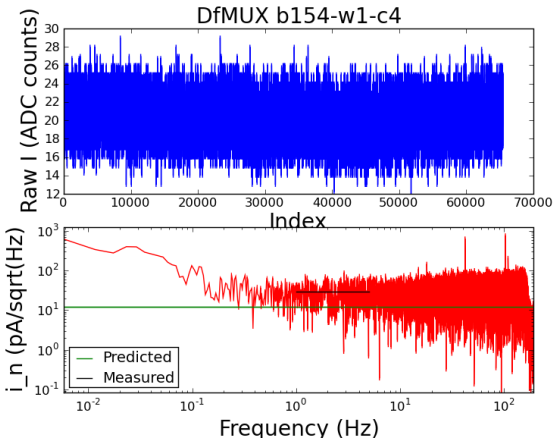
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 793674 Hz
Carrier gain is : 2
Carrier amplitude : 1.03
Nuller gain is : 2
Nuller amplitude : 1.034
Voltage bias is : 5.48372 uV_RMS
R normal is : 1.56 ohm
R is : 1.404 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 3.22202162327 pA/sqrt(Hz)
20 ohms noise : 1.85266243338 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 4.22020138358 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.65618316523 pA/sqrt(Hz)
Carrier shot noise : 2.23579543559 pA/sqrt(Hz)
Carrier digitization noise : 0.313698891578 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 : 3.82584270246 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.14358118231 pA/sqrt(Hz)
Phonon noise : 3.09086661155 pA/sqrt(Hz)

Predicted noise : 12.372240464 pA/sqrt(Hz)
Measured noise : 29.2634033549 pA/sqrt(Hz)
Standard deviation : 15.7537164508 pA/sqrt(Hz)
Measured/predicted : 2.36524689607



b154-w1-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

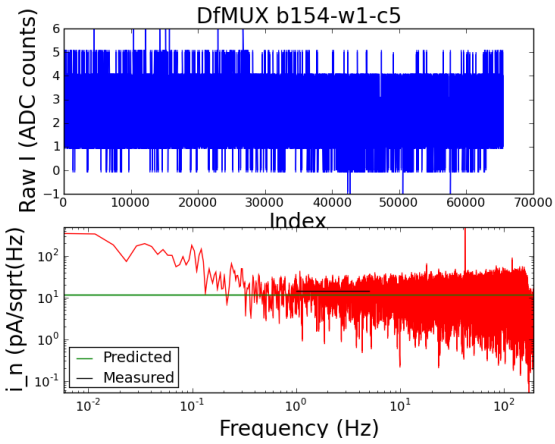
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 867507 Hz
Carrier gain is : 2
Carrier amplitude : 1.32
Nuller gain is : 2
Nuller amplitude : 0.472
Voltage bias is : 7.02768 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 3.29298213095 pA/sqrt(Hz)
20 ohms noise : 1.8934647253 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 4.31314540063 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.46854355094 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 2.58486484598 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.41181258326 pA/sqrt(Hz)

Predicted noise : 11.8895470021 pA/sqrt(Hz)
Measured noise : 14.323905577 pA/sqrt(Hz)
Standard deviation : 7.5420154651 pA/sqrt(Hz)
Measured/predicted : 1.20474779859



b154-w1-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

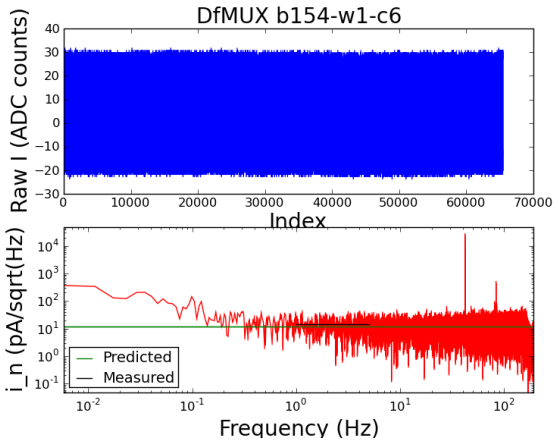
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

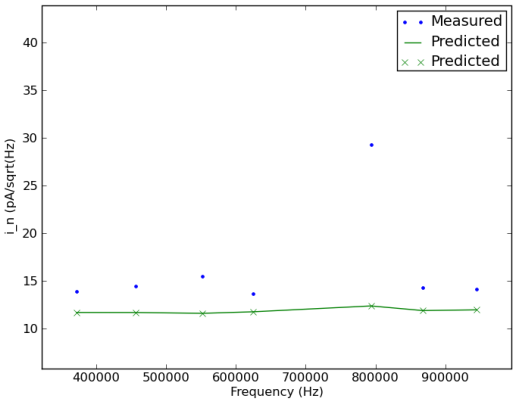
Demod gain is : 1
Demod frequency is : 945012 Hz
Carrier gain is : 2
Carrier amplitude : 1.42
Nuller gain is : 2
Nuller amplitude : 0.456
Voltage bias is : 7.56008 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.210876464844 V
SQUID current bias : 5.36468505859 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 : 3.37234275778 pA/sqrt(Hz)
20 ohms noise : 1.93909708573 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 : 1.64304544296 pA/sqrt(Hz)
Current bias shot noise : 4.41709188713 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.5760982165 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.54067586599 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.24196662669 pA/sqrt(Hz)

Predicted noise : 11.9625400527 pA/sqrt(Hz)
Measured noise : 14.1342630083 pA/sqrt(Hz)
Standard deviation : 7.583740967 pA/sqrt(Hz)
Measured/predicted : 1.18154363087



b154-w1


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
40
35
30
25
20
15
10
400000
500000
600000
700000
800000
900000

b154-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

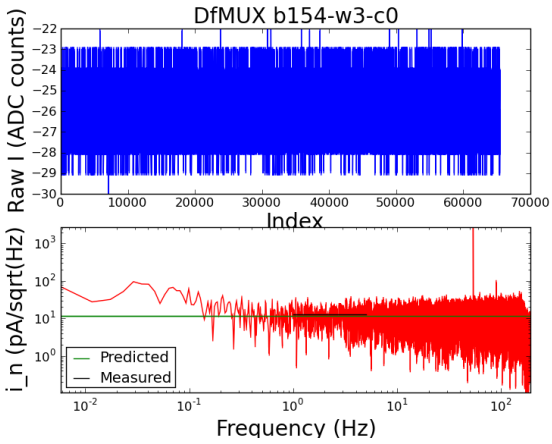
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 367212 Hz
Carrier gain is : 2
Carrier amplitude : 1.2
Nuller gain is : 2
Nuller amplitude : 0.497
Voltage bias is : 6.3888 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 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 : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.39793734617 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.65243674232 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.65299384158 pA/sqrt(Hz)

Predicted noise : 11.8782543301 pA/sqrt(Hz)
Measured noise : 12.920407172 pA/sqrt(Hz)
Standard deviation : 6.58608036386 pA/sqrt(Hz)
Measured/predicted : 1.08773619532



b154-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

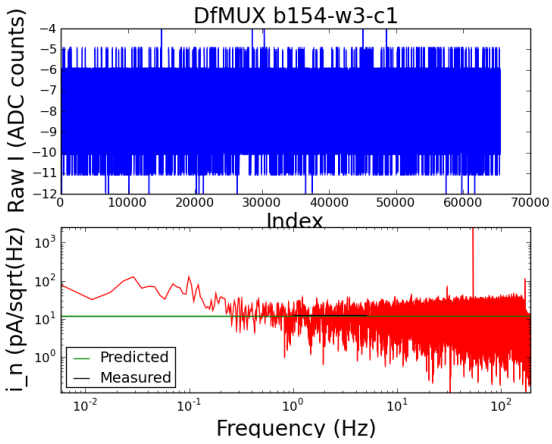
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 450729 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.472
Voltage bias is : 6.655 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 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 : 2.96130579249 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 : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.41698108262 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.58486484598 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.8281853386 pA/sqrt(Hz)
Measured noise : 12.5466340638 pA/sqrt(Hz)
Standard deviation : 6.7809774583 pA/sqrt(Hz)
Measured/predicted : 1.06074040139



b154-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

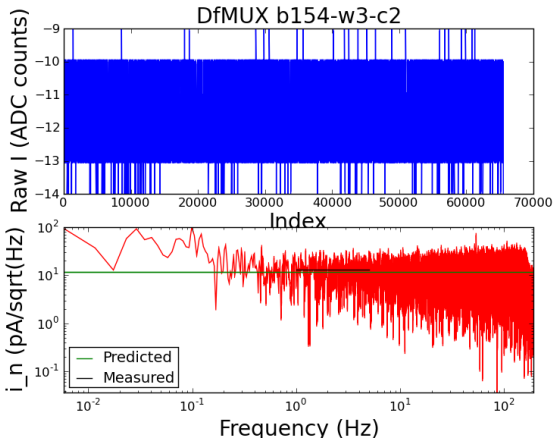
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 529710 Hz
Carrier gain is : 2
Carrier amplitude : 1.29
Nuller gain is : 2
Nuller amplitude : 0.443
Voltage bias is : 6.86796 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 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 : 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 : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.44033069808 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 2.50419822858 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.46790124798 pA/sqrt(Hz)

Predicted noise : 11.8158389972 pA/sqrt(Hz)
Measured noise : 13.0836384408 pA/sqrt(Hz)
Standard deviation : 6.92015957706 pA/sqrt(Hz)
Measured/predicted : 1.10729660787



b154-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

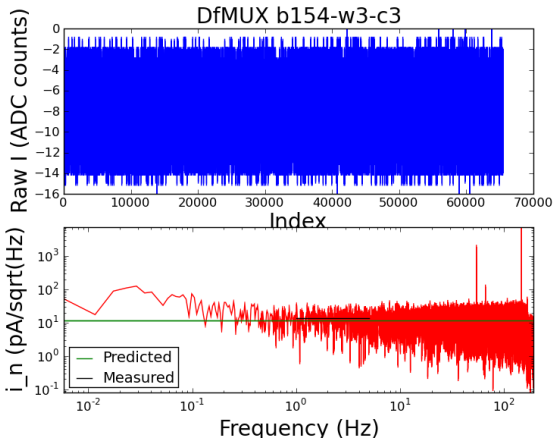
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 630825 Hz
Carrier gain is : 2
Carrier amplitude : 1.34
Nuller gain is : 2
Nuller amplitude : 0.438
Voltage bias is : 7.13416 uV_RMS
R normal is : 1.8 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 : 0.48 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 : 3.08314758827 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 : 0.0567548224876 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 : 2.3740611365 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 : 2.49002608179 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.71936282387 pA/sqrt(Hz)
Phonon noise : 2.37581538052 pA/sqrt(Hz)

Predicted noise : 11.6623110432 pA/sqrt(Hz)
Measured noise : 13.8691609631 pA/sqrt(Hz)
Standard deviation : 7.14399796597 pA/sqrt(Hz)
Measured/predicted : 1.18922921124



b154-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

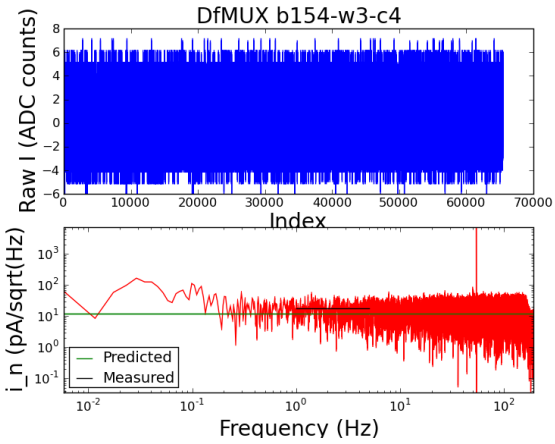
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 714396 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.528
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.72 ohm
R is : 1.548 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 : 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 : 0.0567548224876 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 : 2.40909635916 pA/sqrt(Hz)
Carrier shot noise : 2.37364908041 pA/sqrt(Hz)
Carrier digitization noise : 0.284517599338 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 : 5.85085960689 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.8875162596 pA/sqrt(Hz)
Measured noise : 17.3179096024 pA/sqrt(Hz)
Standard deviation : 8.95401624018 pA/sqrt(Hz)
Measured/predicted : 1.45681479834



b154-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

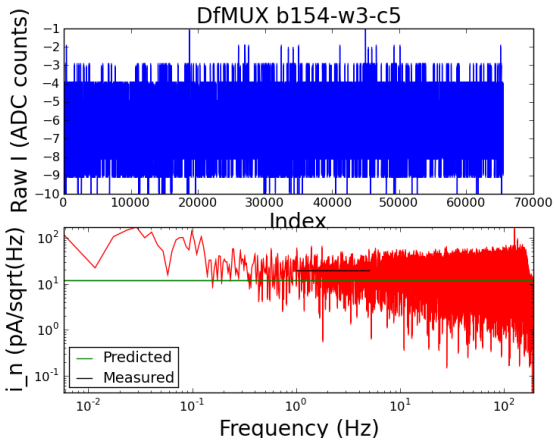
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 799047 Hz
Carrier gain is : 2
Carrier amplitude : 1.33
Nuller gain is : 2
Nuller amplitude : 0.519
Voltage bias is : 7.08092 uV_RMS
R normal is : 1.82 ohm
R is : 1.638 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 : 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 : 0.0567548224876 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 : 2.27672842734 pA/sqrt(Hz)
Carrier shot noise : 2.35215468293 pA/sqrt(Hz)
Carrier digitization noise : 0.268884764209 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 : 2.71050691643 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.68785094316 pA/sqrt(Hz)
Phonon noise : 2.39367865406 pA/sqrt(Hz)

Predicted noise : 11.8227189459 pA/sqrt(Hz)
Measured noise : 19.4059125362 pA/sqrt(Hz)
Standard deviation : 10.1883984925 pA/sqrt(Hz)
Measured/predicted : 1.64140859857



b154-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

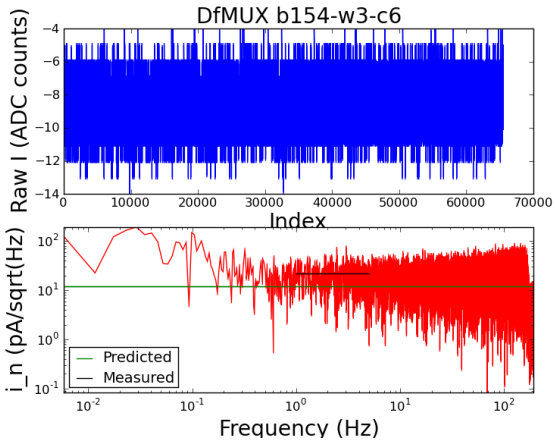
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 879132 Hz
Carrier gain is : 2
Carrier amplitude : 1.4
Nuller gain is : 2
Nuller amplitude : 0.541
Voltage bias is : 7.4536 uV_RMS
R normal is : 1.83 ohm
R is : 1.647 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 : 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 : 0.0567548224876 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 : 2.26428728839 pA/sqrt(Hz)
Carrier shot noise : 2.40665714712 pA/sqrt(Hz)
Carrier digitization noise : 0.267415448558 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 : 5.67228907832 pA/sqrt(Hz)
Phonon noise : 2.27399472136 pA/sqrt(Hz)

Predicted noise : 11.8866782879 pA/sqrt(Hz)
Measured noise : 21.6924479587 pA/sqrt(Hz)
Standard deviation : 11.4093474916 pA/sqrt(Hz)
Measured/predicted : 1.82493775244



b154-w3-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

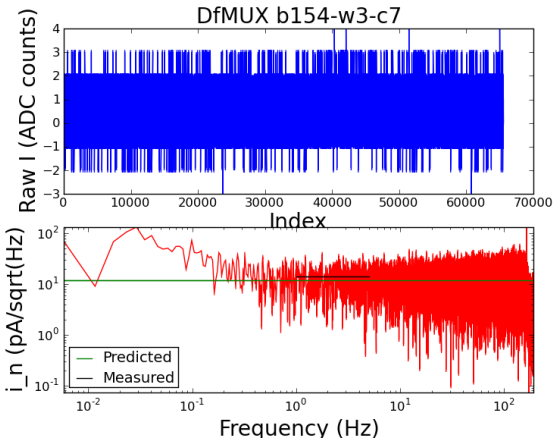
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

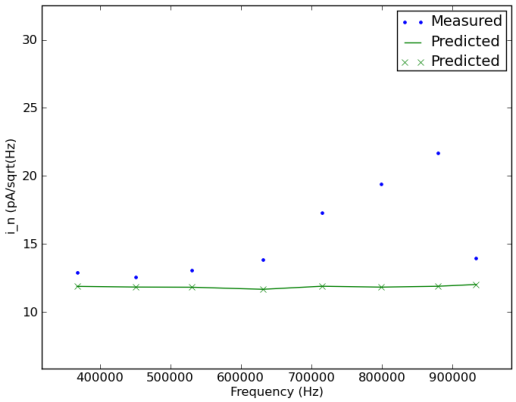
Demod gain is : 1
Demod frequency is : 933324 Hz
Carrier gain is : 2
Carrier amplitude : 1.49
Nuller gain is : 2
Nuller amplitude : 0.464
Voltage bias is : 7.93276 uV_RMS
R normal is : 1.72 ohm
R is : 1.548 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.246765136719 V
SQUID current bias : 6.57080078125 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 : 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 : 0.0567548224876 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 : 2.40909635916 pA/sqrt(Hz)
Carrier shot noise : 2.56097101272 pA/sqrt(Hz)
Carrier digitization noise : 0.284517599338 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 : 2.56286559616 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.85085960689 pA/sqrt(Hz)
Phonon noise : 2.1366393355 pA/sqrt(Hz)

Predicted noise : 12.0156992943 pA/sqrt(Hz)
Measured noise : 13.9745115113 pA/sqrt(Hz)
Standard deviation : 7.01777932325 pA/sqrt(Hz)
Measured/predicted : 1.1630210751



b154-w3


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
30
25
20
15
10
400000
500000
600000
700000
800000
900000

b155-w1-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

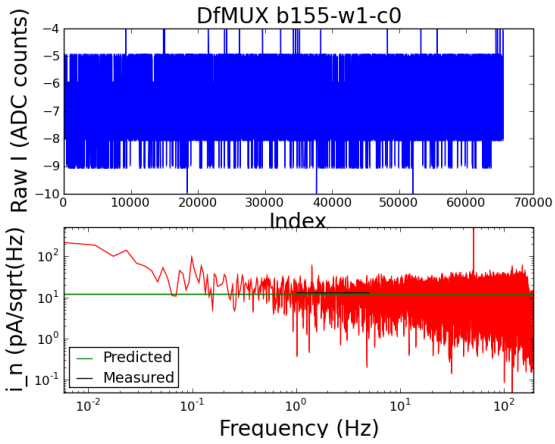
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 387135 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.471
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 2.92705892309 pA/sqrt(Hz)
20 ohms noise : 1.68305888077 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.15898988457 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.35763300769 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.58212518984 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.9050661836 pA/sqrt(Hz)
Measured noise : 13.0340969143 pA/sqrt(Hz)
Standard deviation : 7.27022114997 pA/sqrt(Hz)
Measured/predicted : 1.09483615742



b155-w1-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

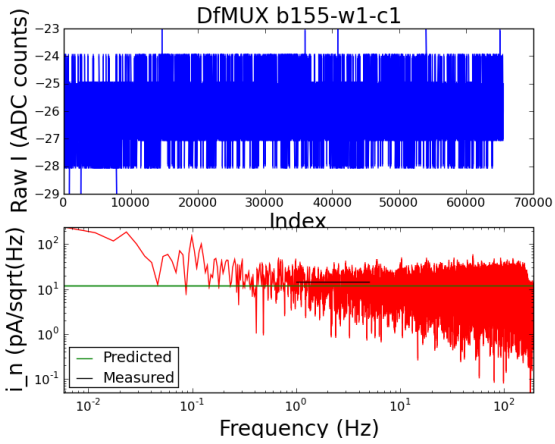
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 467883 Hz
Carrier gain is : 2
Carrier amplitude : 1.22
Nuller gain is : 2
Nuller amplitude : 0.43
Voltage bias is : 6.49528 uV_RMS
R normal is : 1.67 ohm
R is : 1.503 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 2.97135554998 pA/sqrt(Hz)
20 ohms noise : 1.70852944124 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.22192993054 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.48122499267 pA/sqrt(Hz)
Carrier shot noise : 2.35178400218 pA/sqrt(Hz)
Carrier digitization noise : 0.293036090336 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 : 2.46718132289 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.93780136329 pA/sqrt(Hz)
Phonon noise : 2.60950213926 pA/sqrt(Hz)

Predicted noise : 11.7701076772 pA/sqrt(Hz)
Measured noise : 14.5336134745 pA/sqrt(Hz)
Standard deviation : 7.49472153124 pA/sqrt(Hz)
Measured/predicted : 1.23479018826



b155-w1-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

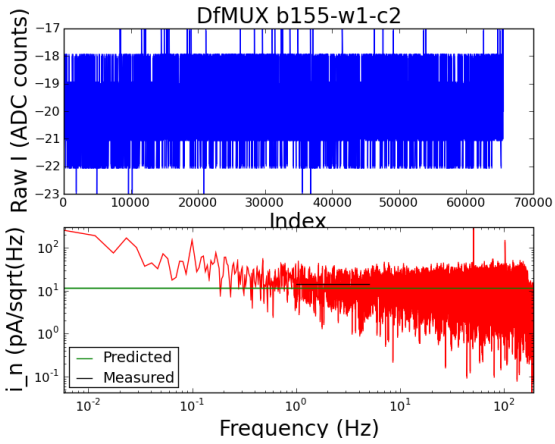
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 559284 Hz
Carrier gain is : 2
Carrier amplitude : 1.26
Nuller gain is : 2
Nuller amplitude : 0.449
Voltage bias is : 6.70824 uV_RMS
R normal is : 1.65 ohm
R is : 1.485 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 3.03051514572 pA/sqrt(Hz)
20 ohms noise : 1.74254620879 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.30598842295 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.51130044712 pA/sqrt(Hz)
Carrier shot noise : 2.40446828159 pA/sqrt(Hz)
Carrier digitization noise : 0.296588042946 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 : 5.97367964364 pA/sqrt(Hz)
Phonon noise : 2.52666080151 pA/sqrt(Hz)

Predicted noise : 11.8489832676 pA/sqrt(Hz)
Measured noise : 14.5245165196 pA/sqrt(Hz)
Standard deviation : 7.9663511775 pA/sqrt(Hz)
Measured/predicted : 1.22580277071



b155-w1-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

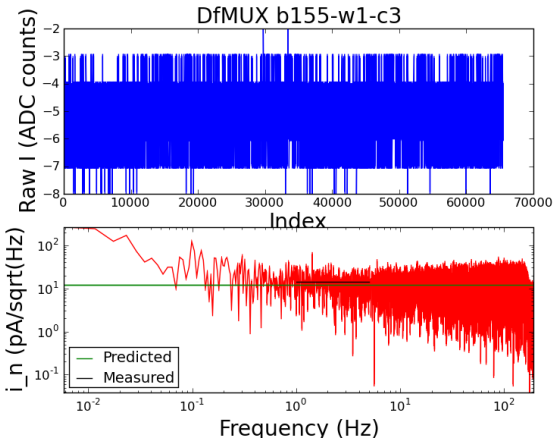
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 635034 Hz
Carrier gain is : 2
Carrier amplitude : 1.26
Nuller gain is : 2
Nuller amplitude : 0.438
Voltage bias is : 6.70824 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 3.08641022397 pA/sqrt(Hz)
20 ohms noise : 1.77468587878 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.38540843845 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.4494155038 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.49002608179 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.52666080151 pA/sqrt(Hz)

Predicted noise : 11.9768273733 pA/sqrt(Hz)
Measured noise : 13.9339797189 pA/sqrt(Hz)
Standard deviation : 7.29294875155 pA/sqrt(Hz)
Measured/predicted : 1.16341158511



b155-w1-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

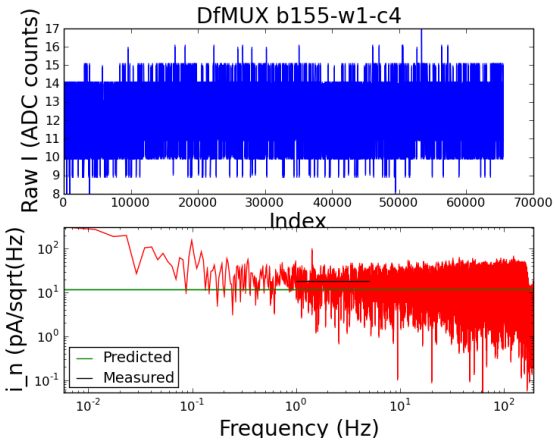
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 732033 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.499
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.68 ohm
R is : 1.512 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 3.16648545185 pA/sqrt(Hz)
20 ohms noise : 1.82072913482 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.49918546567 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.46645579628 pA/sqrt(Hz)
Carrier shot noise : 2.28638891444 pA/sqrt(Hz)
Carrier digitization noise : 0.291291827894 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 : 2.65776827884 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.92010295921 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.9857914159 pA/sqrt(Hz)
Measured noise : 18.3500332991 pA/sqrt(Hz)
Standard deviation : 10.0645128594 pA/sqrt(Hz)
Measured/predicted : 1.53098219903



b155-w1-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

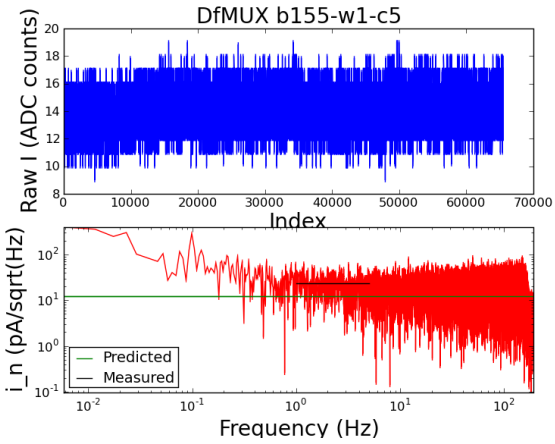
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

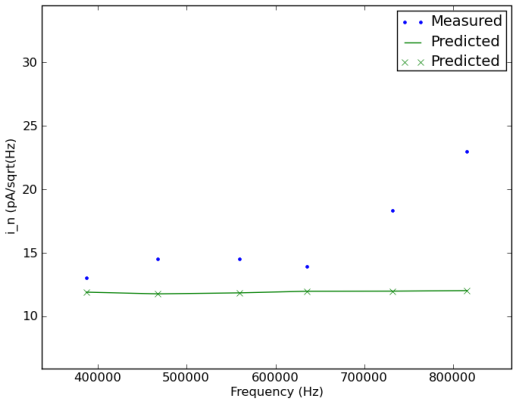
Demod gain is : 1
Demod frequency is : 815388 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.54
Voltage bias is : 6.655 uV_RMS
R normal is : 1.7 ohm
R is : 1.53 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.341613769531 V
SQUID current bias : 6.31317138672 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 : 3.24240127364 pA/sqrt(Hz)
20 ohms noise : 1.86438073234 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 : 2.09123675245 pA/sqrt(Hz)
Current bias shot noise : 4.6070524896 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.43743866927 pA/sqrt(Hz)
Carrier shot noise : 2.35942565756 pA/sqrt(Hz)
Carrier digitization noise : 0.287864865212 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 : 5.88517579327 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 12.0252387851 pA/sqrt(Hz)
Measured noise : 22.9899760538 pA/sqrt(Hz)
Standard deviation : 12.2771413067 pA/sqrt(Hz)
Measured/predicted : 1.91181035691



b155-w1


Measured
Predicted
Predicted
30
25
20
15
10
i_n (pA/sqrt(Hz)
400000
500000
600000
700000
800000
Frequency (Hz)

b155-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

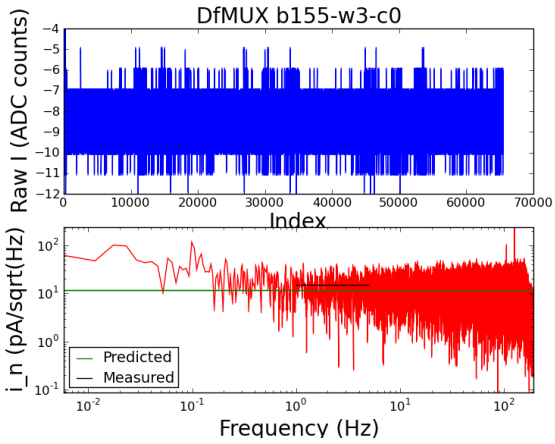
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 383193 Hz
Carrier gain is : 2
Carrier amplitude : 1.24
Nuller gain is : 2
Nuller amplitude : 0.491
Voltage bias is : 6.60176 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 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 : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.42229260474 pA/sqrt(Hz)
Carrier digitization noise : 0.305856419288 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 : 2.63637744187 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.56741339508 pA/sqrt(Hz)

Predicted noise : 11.8701308823 pA/sqrt(Hz)
Measured noise : 14.8648235787 pA/sqrt(Hz)
Standard deviation : 7.75312286431 pA/sqrt(Hz)
Measured/predicted : 1.25228809406



b155-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

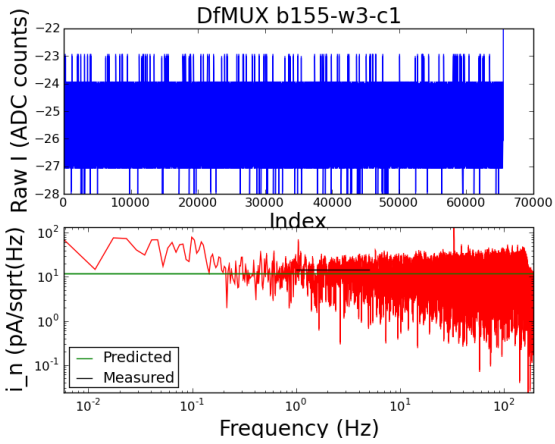
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 474282 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.463
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.65 ohm
R is : 1.485 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 : 2.9751912491 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 : 0.0567548224876 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 : 2.51130044712 pA/sqrt(Hz)
Carrier shot noise : 2.42347623178 pA/sqrt(Hz)
Carrier digitization noise : 0.296588042946 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 : 5.97367964364 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.816971546 pA/sqrt(Hz)
Measured noise : 14.3116550309 pA/sqrt(Hz)
Standard deviation : 7.87298736066 pA/sqrt(Hz)
Measured/predicted : 1.21111022187



b155-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

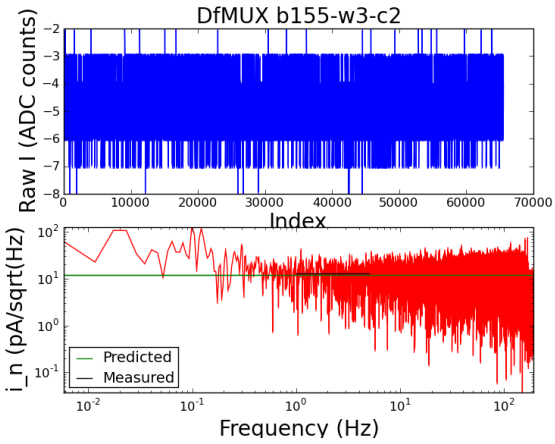
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 554574 Hz
Carrier gain is : 2
Carrier amplitude : 1.33
Nuller gain is : 2
Nuller amplitude : 0.448
Voltage bias is : 7.08092 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 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 : 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 : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.49312506649 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.51829062024 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.39367865406 pA/sqrt(Hz)

Predicted noise : 11.8883435664 pA/sqrt(Hz)
Measured noise : 12.8455258264 pA/sqrt(Hz)
Standard deviation : 6.90986800879 pA/sqrt(Hz)
Measured/predicted : 1.08051435043



b155-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

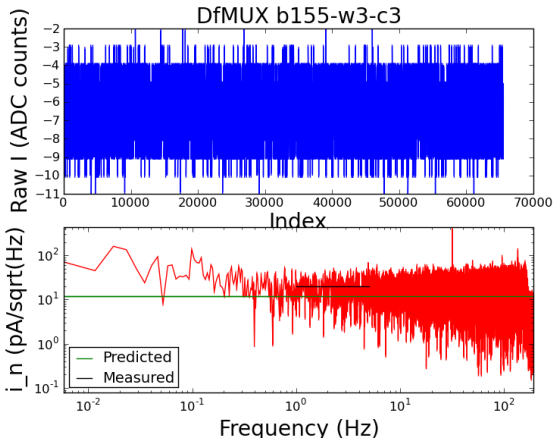
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 726759 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.568
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.71 ohm
R is : 1.539 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 : 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 : 0.0567548224876 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 : 2.42318464196 pA/sqrt(Hz)
Carrier shot noise : 2.26624412604 pA/sqrt(Hz)
Carrier digitization noise : 0.286181444948 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 : 2.83557415138 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.86794244502 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 12.0060136487 pA/sqrt(Hz)
Measured noise : 19.6211617743 pA/sqrt(Hz)
Standard deviation : 10.0250797142 pA/sqrt(Hz)
Measured/predicted : 1.63427781681



b155-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

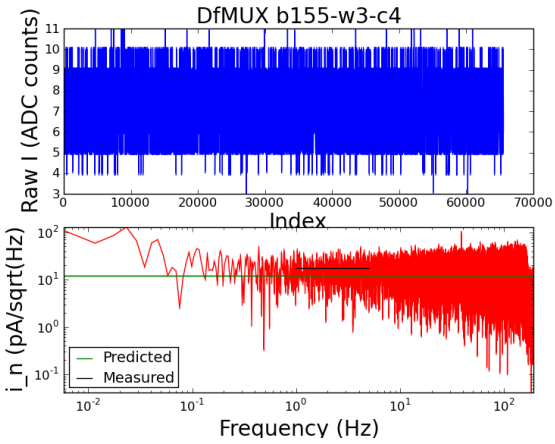
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 802038 Hz
Carrier gain is : 2
Carrier amplitude : 1.24
Nuller gain is : 2
Nuller amplitude : 0.521
Voltage bias is : 6.60176 uV_RMS
R normal is : 1.69 ohm
R is : 1.521 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 : 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 : 0.0567548224876 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 : 2.45186138329 pA/sqrt(Hz)
Carrier shot noise : 2.35691132011 pA/sqrt(Hz)
Carrier digitization noise : 0.28956820761 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 : 2.71572445141 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.90256187485 pA/sqrt(Hz)
Phonon noise : 2.56741339508 pA/sqrt(Hz)

Predicted noise : 12.0441257451 pA/sqrt(Hz)
Measured noise : 17.1919594858 pA/sqrt(Hz)
Standard deviation : 8.84083486664 pA/sqrt(Hz)
Measured/predicted : 1.42741447986



b155-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

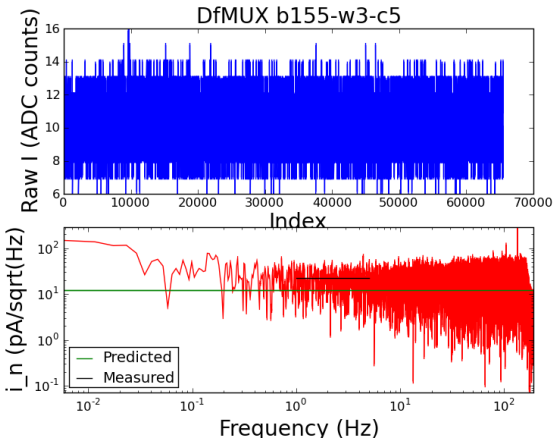
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 893481 Hz
Carrier gain is : 2
Carrier amplitude : 1.41
Nuller gain is : 2
Nuller amplitude : 0.535
Voltage bias is : 7.50684 uV_RMS
R normal is : 1.75 ohm
R is : 1.575 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 : 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 : 0.0567548224876 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 : 2.36779756443 pA/sqrt(Hz)
Carrier shot noise : 2.46982557832 pA/sqrt(Hz)
Carrier digitization noise : 0.279640154778 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 : 2.7519702324 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.80049258992 pA/sqrt(Hz)
Phonon noise : 2.25786709922 pA/sqrt(Hz)

Predicted noise : 12.0331441192 pA/sqrt(Hz)
Measured noise : 22.1491192973 pA/sqrt(Hz)
Standard deviation : 11.1951249265 pA/sqrt(Hz)
Measured/predicted : 1.84067597612



b155-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

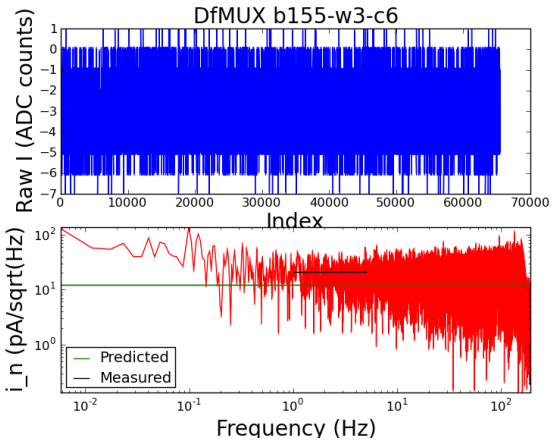
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

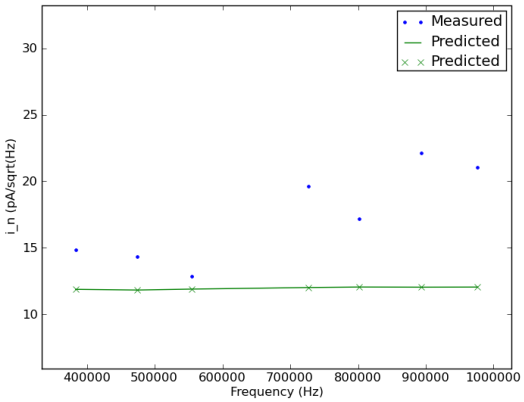
Demod gain is : 1
Demod frequency is : 976395 Hz
Carrier gain is : 2
Carrier amplitude : 1.53
Nuller gain is : 2
Nuller amplitude : 0.5
Voltage bias is : 8.14572 uV_RMS
R normal is : 1.79 ohm
R is : 1.611 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.203186035156 V
SQUID current bias : 7.0322265625 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 : 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 : 0.0567548224876 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 : 2.31488588701 pA/sqrt(Hz)
Carrier shot noise : 2.54387022408 pA/sqrt(Hz)
Carrier digitization noise : 0.273391212772 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 : 2.66043004043 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.73531644712 pA/sqrt(Hz)
Phonon noise : 2.08077948359 pA/sqrt(Hz)

Predicted noise : 12.041167377 pA/sqrt(Hz)
Measured noise : 21.0343153119 pA/sqrt(Hz)
Standard deviation : 10.6130223921 pA/sqrt(Hz)
Measured/predicted : 1.74686678238



b155-w3


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
30
25
20
15
10
400000
500000
600000
700000
800000
900000
1000000

b156-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

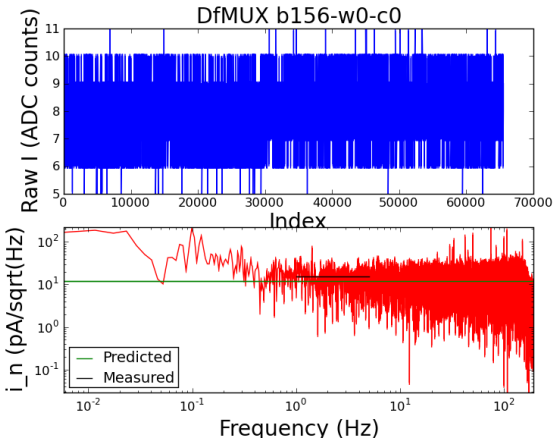
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 428289 Hz
Carrier gain is : 2
Carrier amplitude : 1.18
Nuller gain is : 2
Nuller amplitude : 0.488
Voltage bias is : 6.28232 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 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 : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.34833066043 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.6283109953 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.6979598389 pA/sqrt(Hz)

Predicted noise : 11.7772339875 pA/sqrt(Hz)
Measured noise : 15.4796858035 pA/sqrt(Hz)
Standard deviation : 8.4548468528 pA/sqrt(Hz)
Measured/predicted : 1.31437363136



b156-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

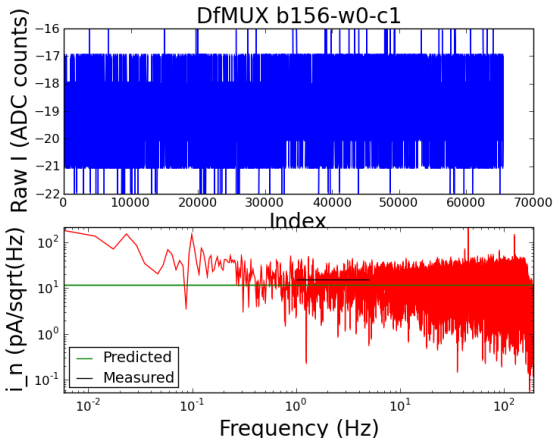
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 516456 Hz
Carrier gain is : 2
Carrier amplitude : 1.12
Nuller gain is : 2
Nuller amplitude : 0.418
Voltage bias is : 5.96288 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 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 : 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 : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.27385537879 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 2.43251194612 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.84249340169 pA/sqrt(Hz)

Predicted noise : 11.7753758486 pA/sqrt(Hz)
Measured noise : 15.2723038534 pA/sqrt(Hz)
Standard deviation : 8.27772465073 pA/sqrt(Hz)
Measured/predicted : 1.29696954473



b156-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

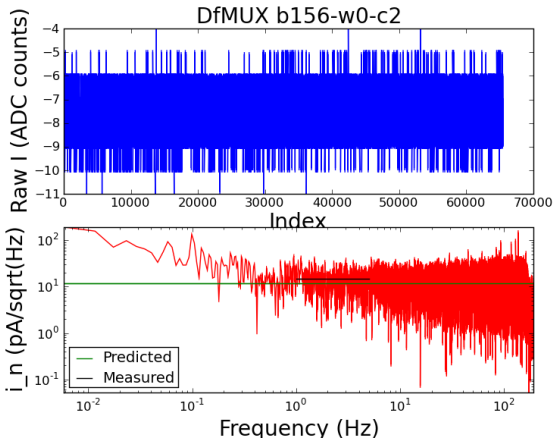
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 600951 Hz
Carrier gain is : 2
Carrier amplitude : 1.27
Nuller gain is : 2
Nuller amplitude : 0.442
Voltage bias is : 6.76148 uV_RMS
R normal is : 1.72 ohm
R is : 1.548 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 : 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 : 0.0567548224876 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 : 2.40909635916 pA/sqrt(Hz)
Carrier shot noise : 2.3643588331 pA/sqrt(Hz)
Carrier digitization noise : 0.284517599338 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 : 5.85085960689 pA/sqrt(Hz)
Phonon noise : 2.50676583456 pA/sqrt(Hz)

Predicted noise : 11.6878145309 pA/sqrt(Hz)
Measured noise : 14.9203494212 pA/sqrt(Hz)
Standard deviation : 7.86021793357 pA/sqrt(Hz)
Measured/predicted : 1.27657308231



b156-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

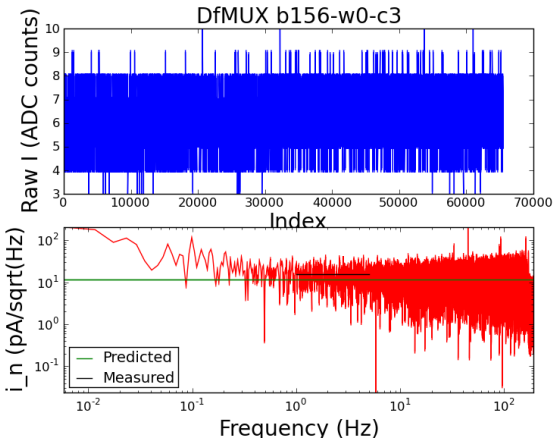
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 680790 Hz
Carrier gain is : 2
Carrier amplitude : 1.32
Nuller gain is : 2
Nuller amplitude : 0.445
Voltage bias is : 7.02768 uV_RMS
R normal is : 1.71 ohm
R is : 1.539 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 : 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 : 0.0567548224876 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 : 2.42318464196 pA/sqrt(Hz)
Carrier shot noise : 2.41748986719 pA/sqrt(Hz)
Carrier digitization noise : 0.286181444948 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 : 2.50984468045 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.86794244502 pA/sqrt(Hz)
Phonon noise : 2.41181258326 pA/sqrt(Hz)

Predicted noise : 11.7493222633 pA/sqrt(Hz)
Measured noise : 15.4101240788 pA/sqrt(Hz)
Standard deviation : 7.76493637181 pA/sqrt(Hz)
Measured/predicted : 1.31157557292



b156-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

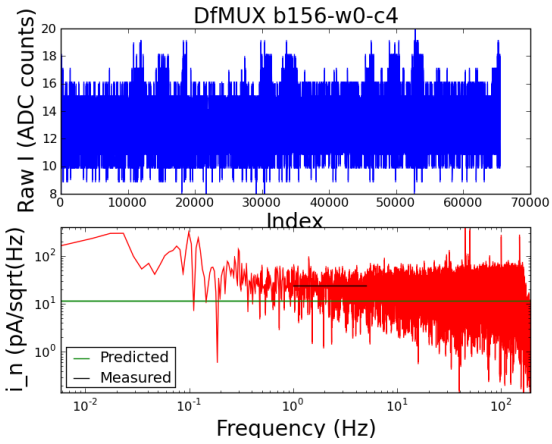
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 779313 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.541
Voltage bias is : 6.655 uV_RMS
R normal is : 1.77 ohm
R is : 1.593 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 : 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 : 0.0567548224876 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 : 2.34104278969 pA/sqrt(Hz)
Carrier shot noise : 2.31229971336 pA/sqrt(Hz)
Carrier digitization noise : 0.276480379018 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 : 5.76762834475 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.827915558 pA/sqrt(Hz)
Measured noise : 24.173859217 pA/sqrt(Hz)
Standard deviation : 13.0128833104 pA/sqrt(Hz)
Measured/predicted : 2.04379707469



b156-w0-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

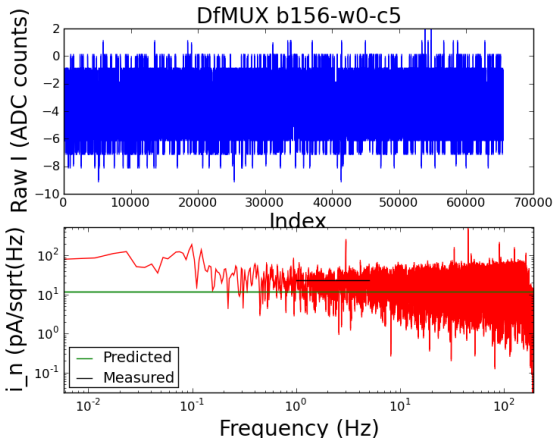
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 861942 Hz
Carrier gain is : 2
Carrier amplitude : 1.24
Nuller gain is : 2
Nuller amplitude : 0.516
Voltage bias is : 6.60176 uV_RMS
R normal is : 1.76 ohm
R is : 1.584 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 : 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 : 0.0567548224876 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 : 2.35434416918 pA/sqrt(Hz)
Carrier shot noise : 2.30956537882 pA/sqrt(Hz)
Carrier digitization noise : 0.278051290262 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 : 2.702661728 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.78399044385 pA/sqrt(Hz)
Phonon noise : 2.56741339508 pA/sqrt(Hz)

Predicted noise : 11.9023671886 pA/sqrt(Hz)
Measured noise : 22.6965482996 pA/sqrt(Hz)
Standard deviation : 15.0188674191 pA/sqrt(Hz)
Measured/predicted : 1.90689364057



b156-w0-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

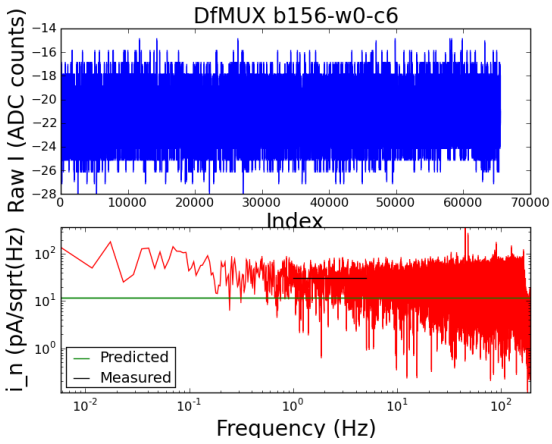
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 947364 Hz
Carrier gain is : 2
Carrier amplitude : 1.38
Nuller gain is : 2
Nuller amplitude : 0.558
Voltage bias is : 7.34712 uV_RMS
R normal is : 1.86 ohm
R is : 1.674 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 : 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 : 0.0567548224876 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 : 2.22776652567 pA/sqrt(Hz)
Carrier shot noise : 2.37005717558 pA/sqrt(Hz)
Carrier digitization noise : 0.263102296162 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 : 5.62635885618 pA/sqrt(Hz)
Phonon noise : 2.30695116659 pA/sqrt(Hz)

Predicted noise : 11.870521446 pA/sqrt(Hz)
Measured noise : 30.8996862025 pA/sqrt(Hz)
Standard deviation : 15.8446829365 pA/sqrt(Hz)
Measured/predicted : 2.60306055999



b156-w0-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

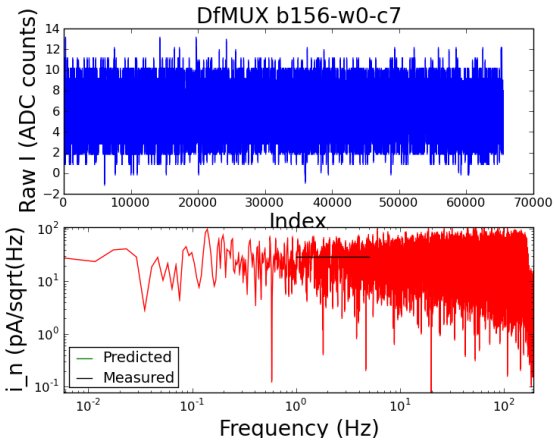
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

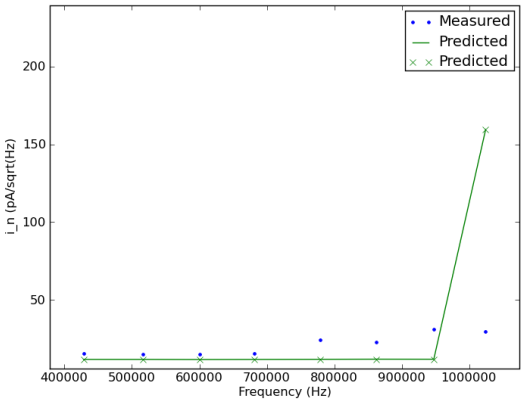
Demod gain is : 1
Demod frequency is : 1024209 Hz
Carrier gain is : 2
Carrier amplitude : 0.02
Nuller gain is : 2
Nuller amplitude : 0.014
Voltage bias is : 0.10648 uV_RMS
R normal is : 1.95 ohm
R is : 1.755 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.0903930664062 V
SQUID current bias : 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 : 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 : 0.0567548224876 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 : 2.12494653218 pA/sqrt(Hz)
Carrier shot noise : 0.27865923735 pA/sqrt(Hz)
Carrier digitization noise : 0.250959113262 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 : 0.445175093643 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.49498605957 pA/sqrt(Hz)
Phonon noise : 159.179630495 pA/sqrt(Hz)

Predicted noise : 159.563674676 pA/sqrt(Hz)
Measured noise : 29.5908490265 pA/sqrt(Hz)
Standard deviation : 15.9581768815 pA/sqrt(Hz)
Measured/predicted : 0.185448530729



b156-w0


Measured
Predicted
Predicted
200
150
100
50
i_n (pA/sqrt(Hz))
400000
500000
600000
700000
800000
900000
1000000
Frequency (Hz)

b157-w1-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

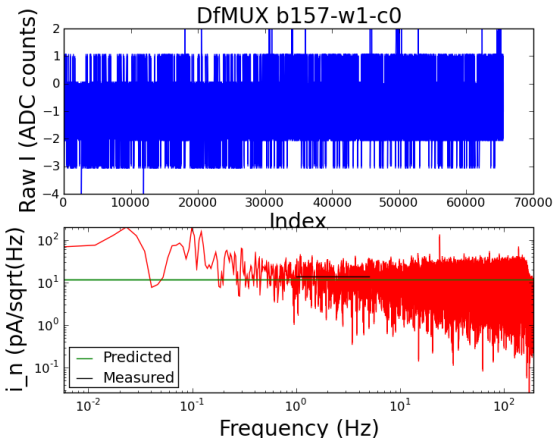
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 389214 Hz
Carrier gain is : 2
Carrier amplitude : 1.11
Nuller gain is : 2
Nuller amplitude : 0.45
Voltage bias is : 5.90964 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 2.92810241011 pA/sqrt(Hz)
20 ohms noise : 1.68365888581 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.37356360908 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.29899845419 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.52390554498 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.86810145036 pA/sqrt(Hz)

Predicted noise : 11.5765344784 pA/sqrt(Hz)
Measured noise : 13.7904669015 pA/sqrt(Hz)
Standard deviation : 7.53892649614 pA/sqrt(Hz)
Measured/predicted : 1.1912431071



b157-w1-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

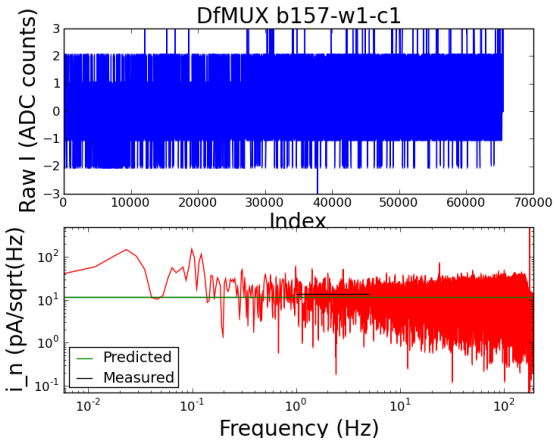
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 474906 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 0.443
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 2.97556779976 pA/sqrt(Hz)
20 ohms noise : 1.71095148486 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.42825005401 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.37295357351 pA/sqrt(Hz)
Carrier digitization noise : 0.305856419288 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 : 2.50419822858 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 11.5594685278 pA/sqrt(Hz)
Measured noise : 13.4983085906 pA/sqrt(Hz)
Standard deviation : 7.37328059641 pA/sqrt(Hz)
Measured/predicted : 1.16772743989



b157-w1-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

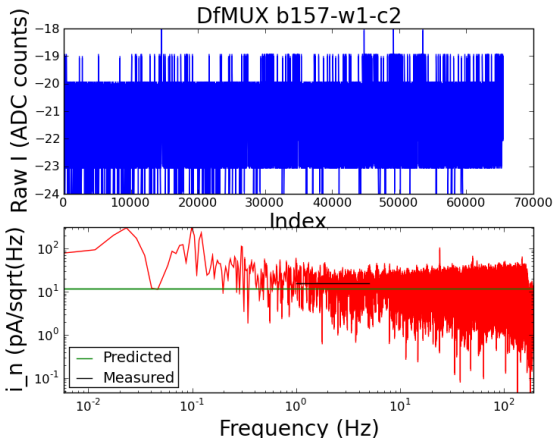
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 561435 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.423
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.61 ohm
R is : 1.449 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.03201841884 pA/sqrt(Hz)
20 ohms noise : 1.74341059083 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.49328867888 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.57369300482 pA/sqrt(Hz)
Carrier shot noise : 2.33556419433 pA/sqrt(Hz)
Carrier digitization noise : 0.303956689976 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 : 6.04743156815 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.5812681215 pA/sqrt(Hz)
Measured noise : 15.7240286489 pA/sqrt(Hz)
Standard deviation : 8.7182424271 pA/sqrt(Hz)
Measured/predicted : 1.35771216795



b157-w1-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

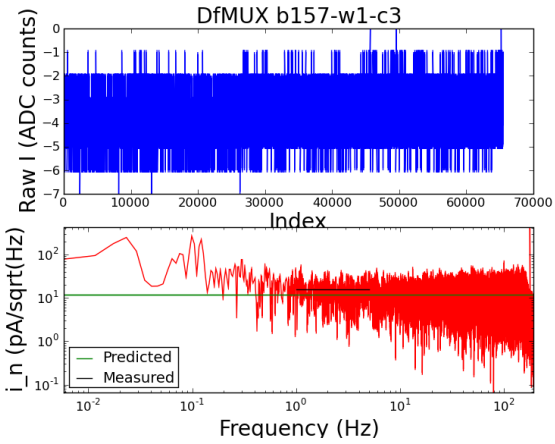
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 636267 Hz
Carrier gain is : 2
Carrier amplitude : 1.23
Nuller gain is : 2
Nuller amplitude : 0.437
Voltage bias is : 6.54852 uV_RMS
R normal is : 1.53 ohm
R is : 1.377 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.08736941895 pA/sqrt(Hz)
20 ohms noise : 1.7752374159 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.55706039638 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.70826518807 pA/sqrt(Hz)
Carrier shot noise : 2.46707636296 pA/sqrt(Hz)
Carrier digitization noise : 0.319849850236 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 : 2.48718196198 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.20351997907 pA/sqrt(Hz)
Phonon noise : 2.58828667471 pA/sqrt(Hz)

Predicted noise : 11.7326851177 pA/sqrt(Hz)
Measured noise : 15.4235918241 pA/sqrt(Hz)
Standard deviation : 8.31180071413 pA/sqrt(Hz)
Measured/predicted : 1.31458329184



b157-w1-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

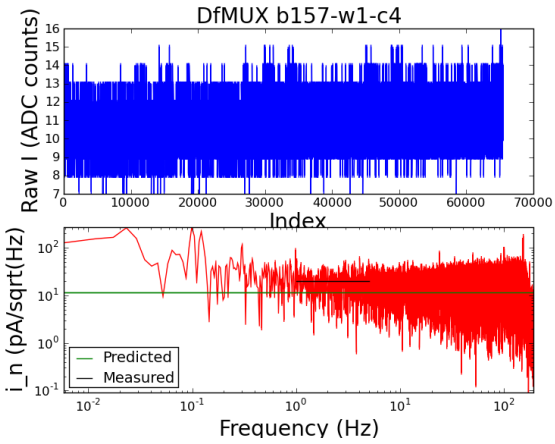
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 729255 Hz
Carrier gain is : 2
Carrier amplitude : 1.17
Nuller gain is : 2
Nuller amplitude : 0.508
Voltage bias is : 6.22908 uV_RMS
R normal is : 1.63 ohm
R is : 1.467 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.16406537654 pA/sqrt(Hz)
20 ohms noise : 1.81933759151 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.64542434519 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.54211394954 pA/sqrt(Hz)
Carrier shot noise : 2.3311750199 pA/sqrt(Hz)
Carrier digitization noise : 0.300227160038 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 : 6.01021625123 pA/sqrt(Hz)
Phonon noise : 2.7210193247 pA/sqrt(Hz)

Predicted noise : 11.6936959707 pA/sqrt(Hz)
Measured noise : 20.072991452 pA/sqrt(Hz)
Standard deviation : 10.7052956301 pA/sqrt(Hz)
Measured/predicted : 1.71656519054



b157-w1-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

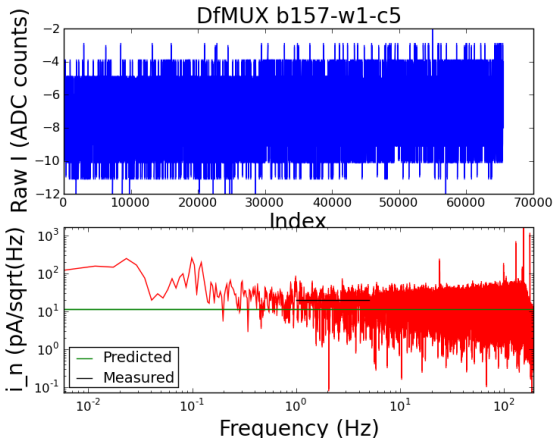
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 818916 Hz
Carrier gain is : 2
Carrier amplitude : 1.18
Nuller gain is : 2
Nuller amplitude : 0.484
Voltage bias is : 6.28232 uV_RMS
R normal is : 1.65 ohm
R is : 1.485 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.24575158071 pA/sqrt(Hz)
20 ohms noise : 1.86630715891 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.7395377221 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.51130044712 pA/sqrt(Hz)
Carrier shot noise : 2.3268842691 pA/sqrt(Hz)
Carrier digitization noise : 0.296588042946 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 : 5.97367964364 pA/sqrt(Hz)
Phonon noise : 2.6979598389 pA/sqrt(Hz)

Predicted noise : 11.7069994312 pA/sqrt(Hz)
Measured noise : 20.1269090659 pA/sqrt(Hz)
Standard deviation : 11.1090708446 pA/sqrt(Hz)
Measured/predicted : 1.71922012845



b157-w1-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

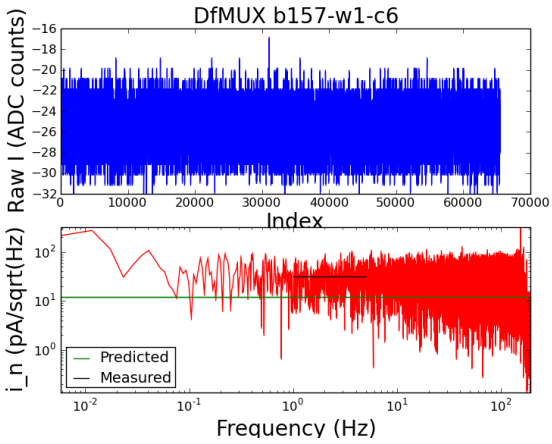
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 902700 Hz
Carrier gain is : 2
Carrier amplitude : 1.44
Nuller gain is : 2
Nuller amplitude : 1.064
Voltage bias is : 7.66656 uV_RMS
R normal is : 1.8 ohm
R is : 1.62 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.32842085192 pA/sqrt(Hz)
20 ohms noise : 1.91384198986 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.83478372305 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.46105174747 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 : 3.88094649074 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.71936282387 pA/sqrt(Hz)
Phonon noise : 2.21082820132 pA/sqrt(Hz)

Predicted noise : 11.8728616402 pA/sqrt(Hz)
Measured noise : 31.9152744585 pA/sqrt(Hz)
Standard deviation : 17.2898730088 pA/sqrt(Hz)
Measured/predicted : 2.68808610978



b157-w1-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

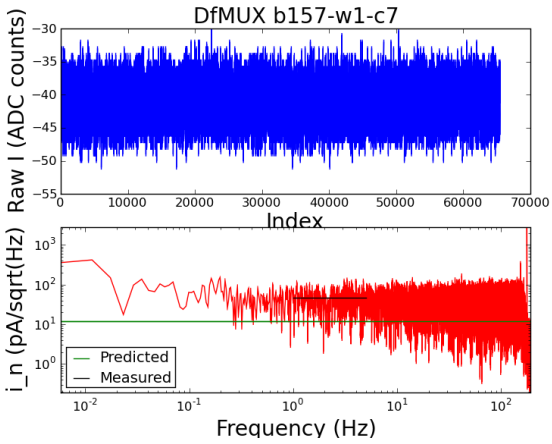
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

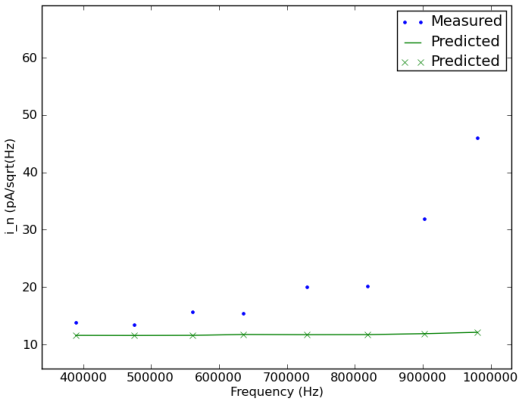
Demod gain is : 1
Demod frequency is : 980454 Hz
Carrier gain is : 2
Carrier amplitude : 1.46
Nuller gain is : 2
Nuller amplitude : 1.138
Voltage bias is : 7.77304 uV_RMS
R normal is : 1.69 ohm
R is : 1.521 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.216003417969 V
SQUID current bias : 4.15087890625 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 : 3.41019740242 pA/sqrt(Hz)
20 ohms noise : 1.96086350639 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 : 1.66289884123 pA/sqrt(Hz)
Current bias shot noise : 3.92900119095 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.45186138329 pA/sqrt(Hz)
Carrier shot noise : 2.55745986905 pA/sqrt(Hz)
Carrier digitization noise : 0.28956820761 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 : 4.0136358938 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.90256187485 pA/sqrt(Hz)
Phonon noise : 2.18054288349 pA/sqrt(Hz)

Predicted noise : 12.1111232259 pA/sqrt(Hz)
Measured noise : 46.0776236926 pA/sqrt(Hz)
Standard deviation : 24.263988649 pA/sqrt(Hz)
Measured/predicted : 3.80457062762



b157-w1


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
10
20
30
40
50
60
400000
500000
600000
700000
800000
900000
1000000

b157-w2-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

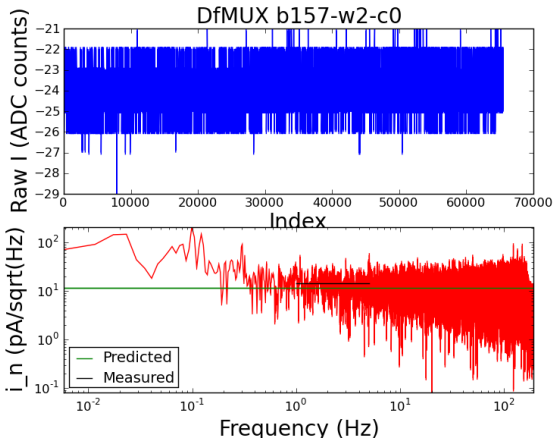
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 436140 Hz
Carrier gain is : 2
Carrier amplitude : 1.09
Nuller gain is : 2
Nuller amplitude : 0.48
Voltage bias is : 5.80316 uV_RMS
R normal is : 1.54 ohm
R is : 1.386 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 2.95302759129 pA/sqrt(Hz)
20 ohms noise : 1.69799086499 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.48223595899 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.69067905049 pA/sqrt(Hz)
Carrier shot noise : 2.31488084127 pA/sqrt(Hz)
Carrier digitization noise : 0.317772903157 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 : 6.18334587693 pA/sqrt(Hz)
Phonon noise : 2.92072716504 pA/sqrt(Hz)

Predicted noise : 11.7504007789 pA/sqrt(Hz)
Measured noise : 14.687351371 pA/sqrt(Hz)
Standard deviation : 8.67691291393 pA/sqrt(Hz)
Measured/predicted : 1.24994471656



b157-w2-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

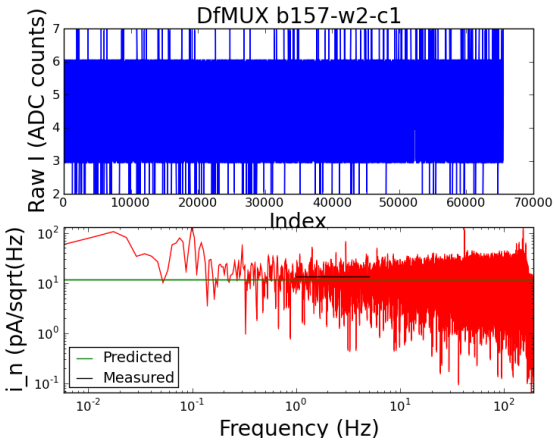
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 517995 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 0.439
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.00263767066 pA/sqrt(Hz)
20 ohms noise : 1.72651666063 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.54073659842 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.34383647603 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 2.49286695674 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 11.5696887006 pA/sqrt(Hz)
Measured noise : 13.7143593263 pA/sqrt(Hz)
Standard deviation : 8.54257512271 pA/sqrt(Hz)
Measured/predicted : 1.18536977798



b157-w2-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

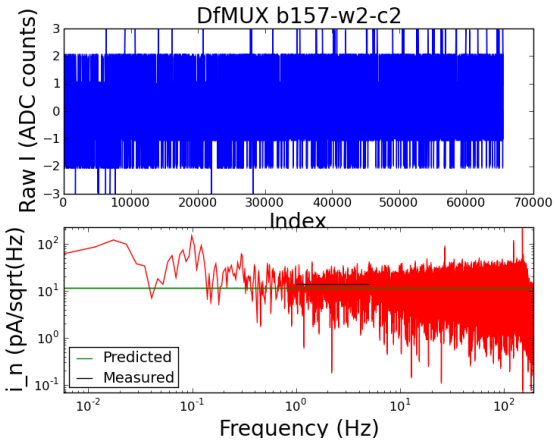
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 611625 Hz
Carrier gain is : 2
Carrier amplitude : 1.21
Nuller gain is : 2
Nuller amplitude : 0.434
Voltage bias is : 6.44204 uV_RMS
R normal is : 1.68 ohm
R is : 1.512 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.06849557395 pA/sqrt(Hz)
20 ohms noise : 1.76438495502 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.61839681388 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.46645579628 pA/sqrt(Hz)
Carrier shot noise : 2.33514469469 pA/sqrt(Hz)
Carrier digitization noise : 0.291291827894 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 : 2.4786300216 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.92010295921 pA/sqrt(Hz)
Phonon noise : 2.63106827264 pA/sqrt(Hz)

Predicted noise : 11.5516332398 pA/sqrt(Hz)
Measured noise : 13.7174006498 pA/sqrt(Hz)
Standard deviation : 7.23095192768 pA/sqrt(Hz)
Measured/predicted : 1.18748581824



b157-w2-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

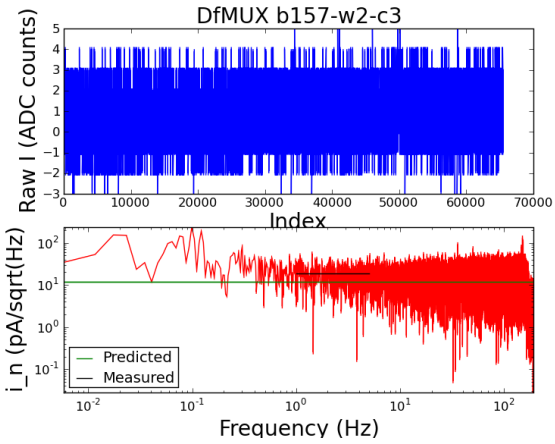
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 704238 Hz
Carrier gain is : 2
Carrier amplitude : 1.28
Nuller gain is : 2
Nuller amplitude : 0.506
Voltage bias is : 6.81472 uV_RMS
R normal is : 1.65 ohm
R is : 1.485 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.14260182826 pA/sqrt(Hz)
20 ohms noise : 1.80699605125 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.705783557 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.51130044712 pA/sqrt(Hz)
Carrier shot noise : 2.42347623178 pA/sqrt(Hz)
Carrier digitization noise : 0.296588042946 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 : 2.67634501812 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.97367964364 pA/sqrt(Hz)
Phonon noise : 2.48718172648 pA/sqrt(Hz)

Predicted noise : 11.6730202593 pA/sqrt(Hz)
Measured noise : 18.7325074471 pA/sqrt(Hz)
Standard deviation : 9.71803604975 pA/sqrt(Hz)
Measured/predicted : 1.60476954816



b157-w2-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

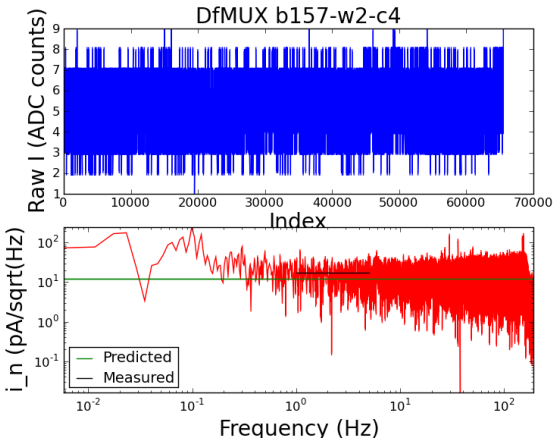
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 769191 Hz
Carrier gain is : 2
Carrier amplitude : 1.06
Nuller gain is : 2
Nuller amplitude : 0.504
Voltage bias is : 5.64344 uV_RMS
R normal is : 1.48 ohm
R is : 1.332 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.19954743499 pA/sqrt(Hz)
20 ohms noise : 1.83973977512 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.77293431443 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.79976063362 pA/sqrt(Hz)
Carrier shot noise : 2.32861573069 pA/sqrt(Hz)
Carrier digitization noise : 0.33065558842 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 : 2.67105056186 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.30743876576 pA/sqrt(Hz)
Phonon noise : 3.00338925462 pA/sqrt(Hz)

Predicted noise : 12.0519574804 pA/sqrt(Hz)
Measured noise : 16.9633504812 pA/sqrt(Hz)
Standard deviation : 9.12288711143 pA/sqrt(Hz)
Measured/predicted : 1.40751828147



b157-w2-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

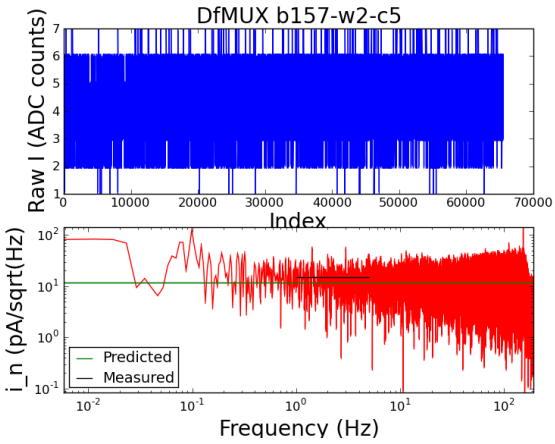
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 840285 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.456
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.53 ohm
R is : 1.377 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.26627458069 pA/sqrt(Hz)
20 ohms noise : 1.8781078839 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.85161954814 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.70826518807 pA/sqrt(Hz)
Carrier shot noise : 2.39584672908 pA/sqrt(Hz)
Carrier digitization noise : 0.319849850236 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 : 2.54067586599 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.20351997907 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.9483285915 pA/sqrt(Hz)
Measured noise : 15.004647296 pA/sqrt(Hz)
Standard deviation : 8.43316525571 pA/sqrt(Hz)
Measured/predicted : 1.25579466459



b157-w2-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

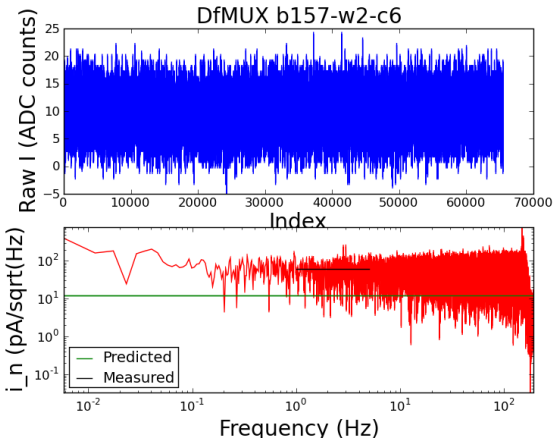
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 951804 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 1.313
Voltage bias is : 6.655 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.37952319862 pA/sqrt(Hz)
20 ohms noise : 1.94322583921 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 3.98516330873 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.40219818503 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 4.31121025792 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 12.3442924328 pA/sqrt(Hz)
Measured noise : 60.1749426995 pA/sqrt(Hz)
Standard deviation : 34.7481861246 pA/sqrt(Hz)
Measured/predicted : 4.87471785255



b157-w2-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

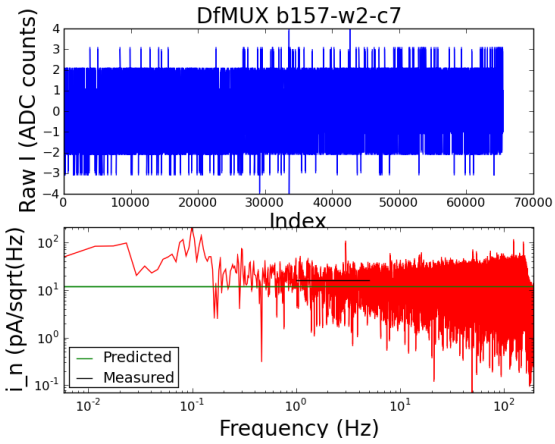
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

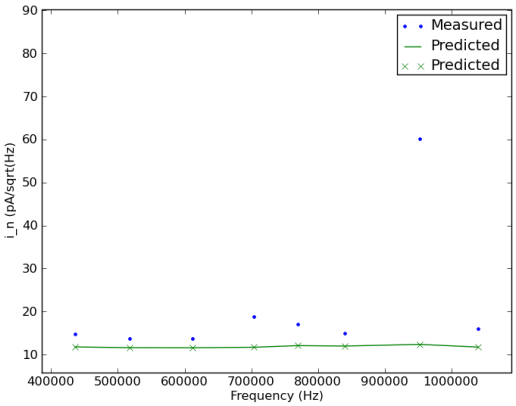
Demod gain is : 1
Demod frequency is : 1039470 Hz
Carrier gain is : 2
Carrier amplitude : 1.59
Nuller gain is : 2
Nuller amplitude : 0.444
Voltage bias is : 8.46516 uV_RMS
R normal is : 1.76 ohm
R is : 1.584 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.267272949219 V
SQUID current bias : 4.34826660156 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 : 3.47528641286 pA/sqrt(Hz)
20 ohms noise : 1.99828968739 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 : 1.84974994021 pA/sqrt(Hz)
Current bias shot noise : 4.09808812838 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.35434416918 pA/sqrt(Hz)
Carrier shot noise : 2.61527872136 pA/sqrt(Hz)
Carrier digitization noise : 0.278051290262 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 : 2.50702304417 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.78399044385 pA/sqrt(Hz)
Phonon noise : 2.00225950308 pA/sqrt(Hz)

Predicted noise : 11.7114304088 pA/sqrt(Hz)
Measured noise : 16.0029771468 pA/sqrt(Hz)
Standard deviation : 9.09255487763 pA/sqrt(Hz)
Measured/predicted : 1.36644086916



b157-w2


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
90
80
70
60
50
40
30
20
10
400000
500000
600000
700000
800000
900000
1000000

b157-w3-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

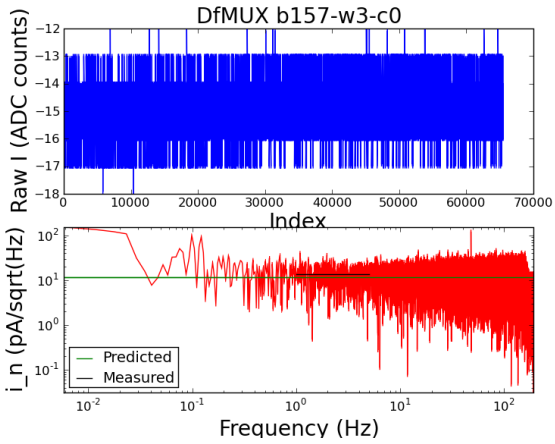
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 387468 Hz
Carrier gain is : 2
Carrier amplitude : 1.15
Nuller gain is : 2
Nuller amplitude : 0.479
Voltage bias is : 6.1226 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 2.92722571167 pA/sqrt(Hz)
20 ohms noise : 1.68315478421 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.45638582861 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.3327311078 pA/sqrt(Hz)
Carrier digitization noise : 0.305856419288 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 : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.76834139991 pA/sqrt(Hz)

Predicted noise : 11.616856748 pA/sqrt(Hz)
Measured noise : 13.4445344893 pA/sqrt(Hz)
Standard deviation : 6.85730526256 pA/sqrt(Hz)
Measured/predicted : 1.15732979936



b157-w3-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

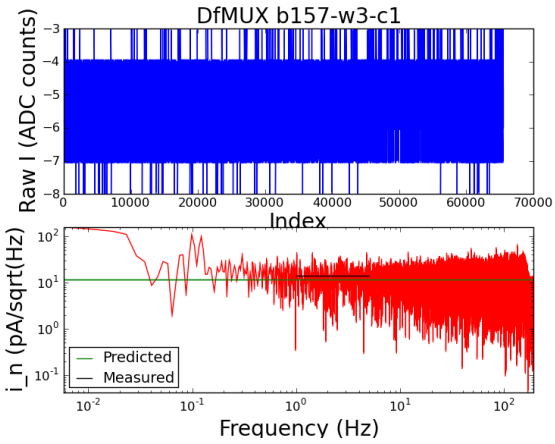
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 472224 Hz
Carrier gain is : 2
Carrier amplitude : 1.2
Nuller gain is : 2
Nuller amplitude : 0.46
Voltage bias is : 6.3888 uV_RMS
R normal is : 1.61 ohm
R is : 1.449 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 2.97395251645 pA/sqrt(Hz)
20 ohms noise : 1.71002269696 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.51155952608 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.57369300482 pA/sqrt(Hz)
Carrier shot noise : 2.3754912608 pA/sqrt(Hz)
Carrier digitization noise : 0.303956689976 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 : 2.55179485069 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.04743156815 pA/sqrt(Hz)
Phonon noise : 2.65299384158 pA/sqrt(Hz)

Predicted noise : 11.6059018712 pA/sqrt(Hz)
Measured noise : 14.0963446684 pA/sqrt(Hz)
Standard deviation : 7.13303472368 pA/sqrt(Hz)
Measured/predicted : 1.21458416803



b157-w3-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

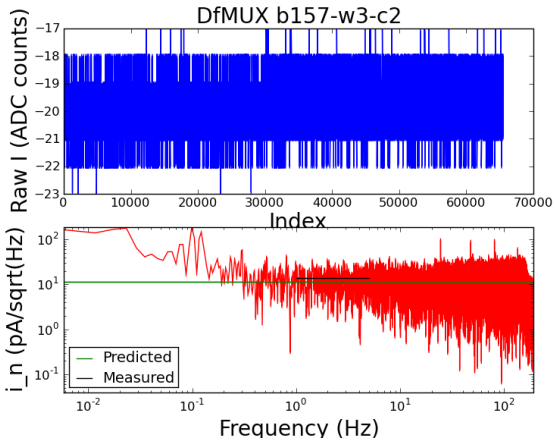
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 551253 Hz
Carrier gain is : 2
Carrier amplitude : 1.18
Nuller gain is : 2
Nuller amplitude : 0.426
Voltage bias is : 6.28232 uV_RMS
R normal is : 1.6 ohm
R is : 1.44 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.02494675522 pA/sqrt(Hz)
20 ohms noise : 1.73934438425 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.57177208964 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.5897785861 pA/sqrt(Hz)
Carrier shot noise : 2.36296214567 pA/sqrt(Hz)
Carrier digitization noise : 0.3058564192 88 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 : 2.45567924941 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.06630035524 pA/sqrt(Hz)
Phonon noise : 2.6979598389 pA/sqrt(Hz)

Predicted noise : 11.6423042251 pA/sqrt(Hz)
Measured noise : 13.796309544 pA/sqrt(Hz)
Standard deviation : 7.05343124614 pA/sqrt(Hz)
Measured/predicted : 1.18501537816



b157-w3-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

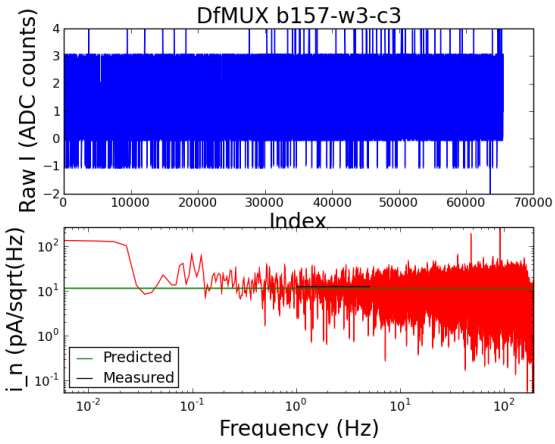
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 632844 Hz
Carrier gain is : 2
Carrier amplitude : 1.23
Nuller gain is : 2
Nuller amplitude : 0.423
Voltage bias is : 6.54852 uV_RMS
R normal is : 1.63 ohm
R is : 1.467 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.08471037028 pA/sqrt(Hz)
20 ohms noise : 1.77370846291 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.6423392862 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.54211394954 pA/sqrt(Hz)
Carrier shot noise : 2.3902014501 pA/sqrt(Hz)
Carrier digitization noise : 0.300227160038 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 : 6.01021625123 pA/sqrt(Hz)
Phonon noise : 2.58828667471 pA/sqrt(Hz)

Predicted noise : 11.624117569 pA/sqrt(Hz)
Measured noise : 12.8616108635 pA/sqrt(Hz)
Standard deviation : 6.72243595898 pA/sqrt(Hz)
Measured/predicted : 1.10645911718



b157-w3-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

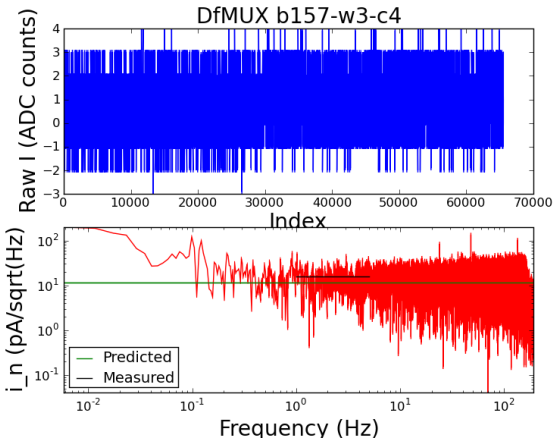
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 713496 Hz
Carrier gain is : 2
Carrier amplitude : 1.14
Nuller gain is : 2
Nuller amplitude : 0.472
Voltage bias is : 6.06936 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.15047515759 pA/sqrt(Hz)
20 ohms noise : 1.81152321561 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.71999249824 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.3081852978 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.58486484598 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.7926250964 pA/sqrt(Hz)

Predicted noise : 11.7451857721 pA/sqrt(Hz)
Measured noise : 15.5959968126 pA/sqrt(Hz)
Standard deviation : 8.32800127012 pA/sqrt(Hz)
Measured/predicted : 1.32786293169



b157-w3-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

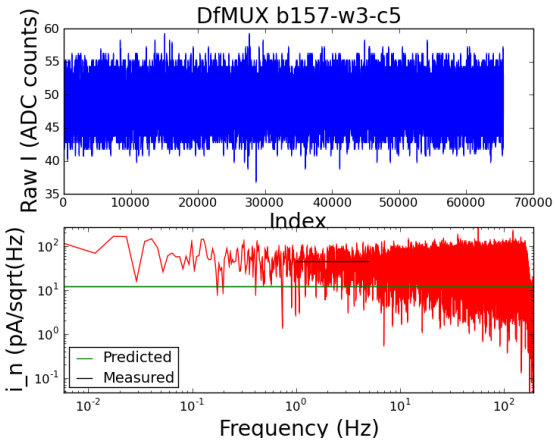
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 819909 Hz
Carrier gain is : 2
Carrier amplitude : 1.19
Nuller gain is : 2
Nuller amplitude : 1.276
Voltage bias is : 6.33556 uV_RMS
R normal is : 1.76 ohm
R is : 1.584 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.2466965223 pA/sqrt(Hz)
20 ohms noise : 1.86685050032 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.83360798066 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.35434416918 pA/sqrt(Hz)
Carrier shot noise : 2.26252245836 pA/sqrt(Hz)
Carrier digitization noise : 0.278051290262 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 : 4.25003178529 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.78399044385 pA/sqrt(Hz)
Phonon noise : 2.67528790748 pA/sqrt(Hz)

Predicted noise : 12.0935142921 pA/sqrt(Hz)
Measured noise : 45.316786662 pA/sqrt(Hz)
Standard deviation : 23.2588014878 pA/sqrt(Hz)
Measured/predicted : 3.7471975116



b157-w3-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

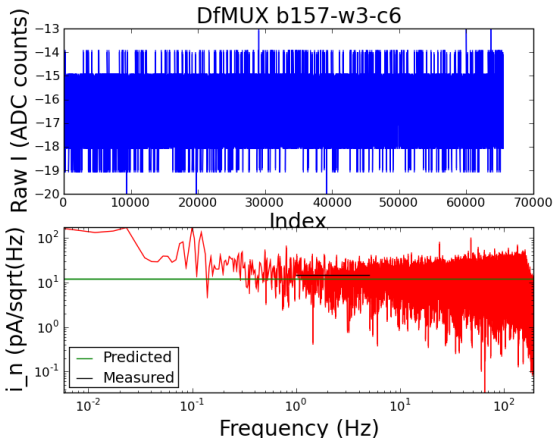
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 866916 Hz
Carrier gain is : 2
Carrier amplitude : 1.21
Nuller gain is : 2
Nuller amplitude : 0.415
Voltage bias is : 6.44204 uV_RMS
R normal is : 1.59 ohm
R is : 1.431 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.29239569882 pA/sqrt(Hz)
20 ohms noise : 1.89312752682 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 3.88756828358 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.60606650173 pA/sqrt(Hz)
Carrier shot noise : 2.40032404152 pA/sqrt(Hz)
Carrier digitization noise : 0.307780044567 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 : 2.42376711753 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.08534687104 pA/sqrt(Hz)
Phonon noise : 2.63106827264 pA/sqrt(Hz)

Predicted noise : 11.8376560072 pA/sqrt(Hz)
Measured noise : 14.6251642366 pA/sqrt(Hz)
Standard deviation : 7.54236348524 pA/sqrt(Hz)
Measured/predicted : 1.23547805645



b157-w3-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

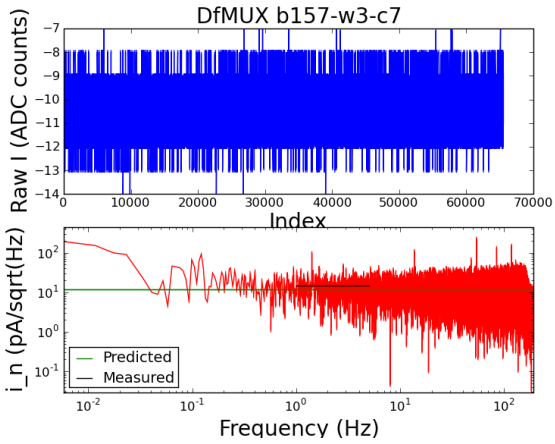
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

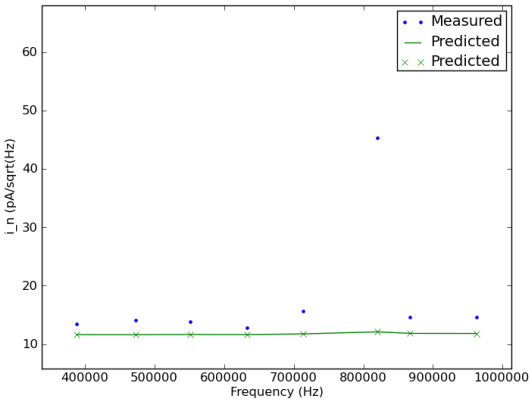
Demod gain is : 1
Demod frequency is : 962928 Hz
Carrier gain is : 2
Carrier amplitude : 1.43
Nuller gain is : 2
Nuller amplitude : 0.449
Voltage bias is : 7.61332 uV_RMS
R normal is : 1.64 ohm
R is : 1.476 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.269836425781 V
SQUID current bias : 4.35980224609 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 : 3.39135953569 pA/sqrt(Hz)
20 ohms noise : 1.95003173302 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 : 1.85859946077 pA/sqrt(Hz)
Current bias shot noise : 4.00442200003 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.52661325473 pA/sqrt(Hz)
Carrier shot noise : 2.56934158909 pA/sqrt(Hz)
Carrier digitization noise : 0.298396506623 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 : 5.99186440304 pA/sqrt(Hz)
Phonon noise : 2.22628853839 pA/sqrt(Hz)

Predicted noise : 11.8213807967 pA/sqrt(Hz)
Measured noise : 14.618486963 pA/sqrt(Hz)
Standard deviation : 8.8632877772 pA/sqrt(Hz)
Measured/predicted : 1.23661416668



b157-w3


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
10
20
30
40
50
60
400000
500000
600000
700000
800000
900000
1000000

b158-w0-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

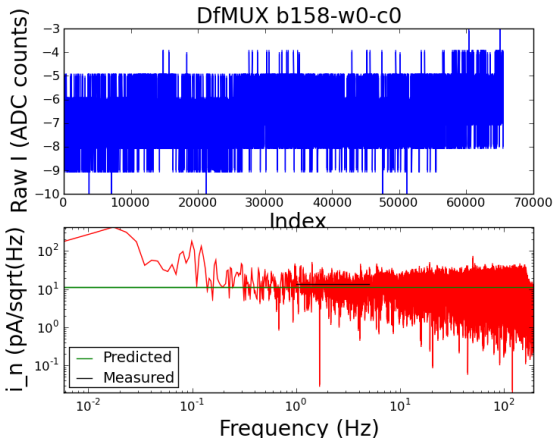
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 431103 Hz
Carrier gain is : 2
Carrier amplitude : 1.17
Nuller gain is : 2
Nuller amplitude : 0.446
Voltage bias is : 6.22908 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.260864257812 V
SQUID current bias : 4.37005615234 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 : 2.95022727136 pA/sqrt(Hz)
20 ohms noise : 1.69638068103 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 : 1.82743865989 pA/sqrt(Hz)
Current bias shot noise : 3.48763952795 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.3383589353 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.51266314814 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.7210193247 pA/sqrt(Hz)

Predicted noise : 11.5720178319 pA/sqrt(Hz)
Measured noise : 13.3494009021 pA/sqrt(Hz)
Standard deviation : 7.22914489234 pA/sqrt(Hz)
Measured/predicted : 1.15359318453



b158-w0-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

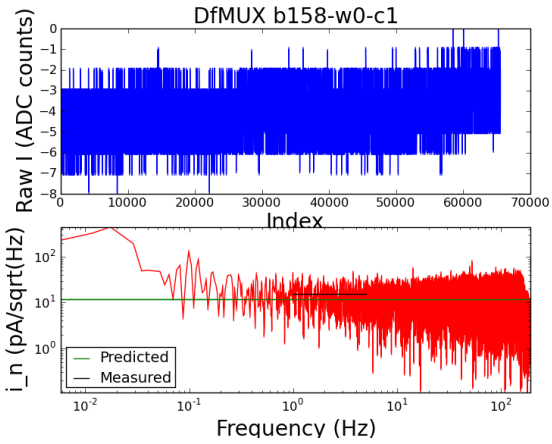
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 592404 Hz
Carrier gain is : 2
Carrier amplitude : 1.16
Nuller gain is : 2
Nuller amplitude : 0.488
Voltage bias is : 6.17584 uV_RMS
R normal is : 1.61 ohm
R is : 1.449 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.260864257812 V
SQUID current bias : 4.37005615234 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 : 3.05421129775 pA/sqrt(Hz)
20 ohms noise : 1.75617149621 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 : 1.82743865989 pA/sqrt(Hz)
Current bias shot noise : 3.61056524431 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.57369300482 pA/sqrt(Hz)
Carrier shot noise : 2.33556419433 pA/sqrt(Hz)
Carrier digitization noise : 0.303956689976 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 : 2.6283109953 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.04743156815 pA/sqrt(Hz)
Phonon noise : 2.74447638784 pA/sqrt(Hz)

Predicted noise : 11.6890136721 pA/sqrt(Hz)
Measured noise : 15.1083700247 pA/sqrt(Hz)
Standard deviation : 8.08968465338 pA/sqrt(Hz)
Measured/predicted : 1.2925273636



b158-w0-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

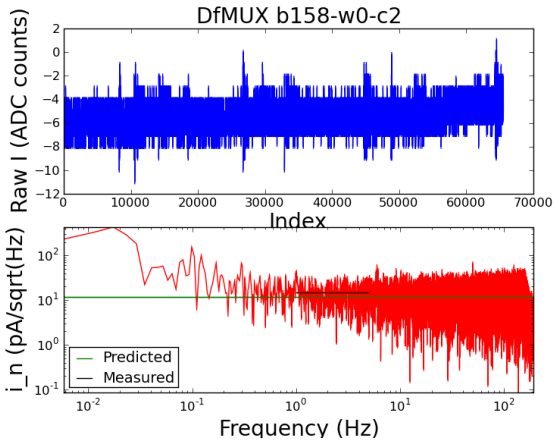
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 671754 Hz
Carrier gain is : 2
Carrier amplitude : 1.31
Nuller gain is : 2
Nuller amplitude : 0.465
Voltage bias is : 6.97444 uV_RMS
R normal is : 1.62 ohm
R is : 1.458 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.260864257812 V
SQUID current bias : 4.37005615234 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 : 3.11563424977 pA/sqrt(Hz)
20 ohms noise : 1.79148969362 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 : 1.82743865989 pA/sqrt(Hz)
Current bias shot noise : 3.68317697746 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.55780601096 pA/sqrt(Hz)
Carrier shot noise : 2.47430875929 pA/sqrt(Hz)
Carrier digitization noise : 0.302080414112 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 : 2.56562581839 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.02873776278 pA/sqrt(Hz)
Phonon noise : 2.43022336633 pA/sqrt(Hz)

Predicted noise : 11.6650805449 pA/sqrt(Hz)
Measured noise : 14.9875062456 pA/sqrt(Hz)
Standard deviation : 7.55014585384 pA/sqrt(Hz)
Measured/predicted : 1.28481806773



b158-w0-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

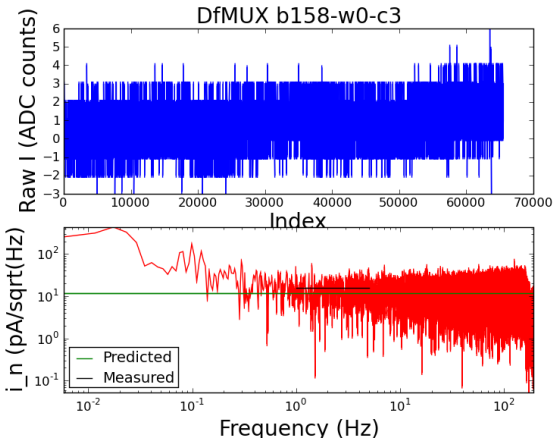
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 766101 Hz
Carrier gain is : 2
Carrier amplitude : 1.24
Nuller gain is : 2
Nuller amplitude : 0.441
Voltage bias is : 6.60176 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.260864257812 V
SQUID current bias : 4.37005615234 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 : 3.19674952665 pA/sqrt(Hz)
20 ohms noise : 1.83813097782 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 : 1.82743865989 pA/sqrt(Hz)
Current bias shot noise : 3.77906818174 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.43757535953 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.49853901631 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.56741339508 pA/sqrt(Hz)

Predicted noise : 11.7854453011 pA/sqrt(Hz)
Measured noise : 15.6701405648 pA/sqrt(Hz)
Standard deviation : 8.31364701752 pA/sqrt(Hz)
Measured/predicted : 1.32961803008



b158-w0-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

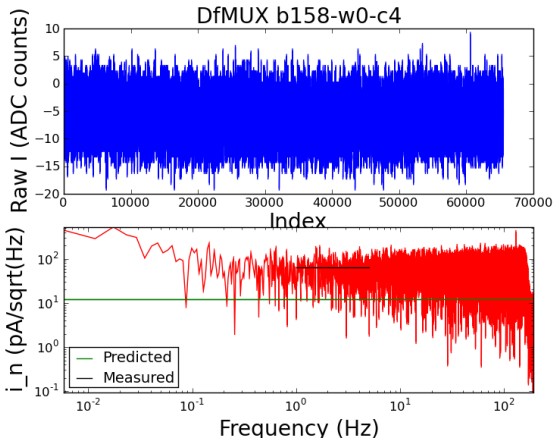
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

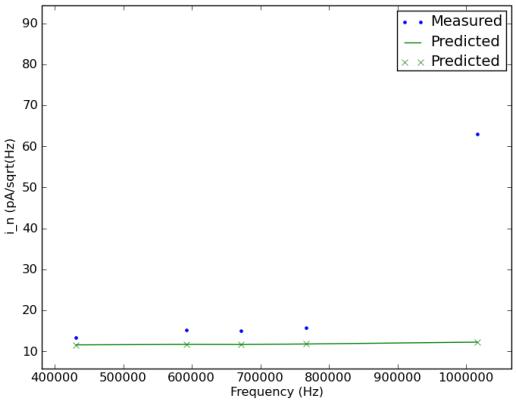
Demod gain is : 1
Demod frequency is : 1015845 Hz
Carrier gain is : 2
Carrier amplitude : 1.38
Nuller gain is : 2
Nuller amplitude : 1.159
Voltage bias is : 7.34712 uV_RMS
R normal is : 1.67 ohm
R is : 1.503 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.260864257812 V
SQUID current bias : 4.37005615234 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 : 3.44892939404 pA/sqrt(Hz)
20 ohms noise : 1.98313440158 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 : 1.82743865989 pA/sqrt(Hz)
Current bias shot noise : 4.07718503607 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.48122499267 pA/sqrt(Hz)
Carrier shot noise : 2.50124975815 pA/sqrt(Hz)
Carrier digitization noise : 0.293036090336 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 : 4.05049927589 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.93780136329 pA/sqrt(Hz)
Phonon noise : 2.30695116659 pA/sqrt(Hz)

Predicted noise : 12.2449089752 pA/sqrt(Hz)
Measured noise : 62.9011196251 pA/sqrt(Hz)
Standard deviation : 33.3677031038 pA/sqrt(Hz)
Measured/predicted : 5.13692014801



b158-w0


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
90
80
70
60
50
40
30
20
10
400000
500000
600000
700000
800000
900000
1000000

b158-w1-c0

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

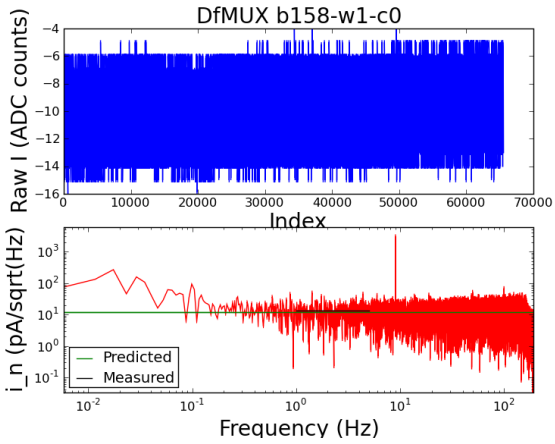
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 378231 Hz
Carrier gain is : 2
Carrier amplitude : 1.14
Nuller gain is : 2
Nuller amplitude : 0.472
Voltage bias is : 6.06936 uV_RMS
R normal is : 1.57 ohm
R is : 1.413 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 2.92264881713 pA/sqrt(Hz)
20 ohms noise : 1.68052306985 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.43878535975 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.63926480112 pA/sqrt(Hz)
Carrier shot noise : 2.34465177806 pA/sqrt(Hz)
Carrier digitization noise : 0.311700809466 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 : 2.58486484598 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.1239843822 pA/sqrt(Hz)
Phonon noise : 2.7926250964 pA/sqrt(Hz)

Predicted noise : 11.692086571 pA/sqrt(Hz)
Measured noise : 13.2105022089 pA/sqrt(Hz)
Standard deviation : 7.68664154701 pA/sqrt(Hz)
Measured/predicted : 1.12986695135



b158-w1-c1

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

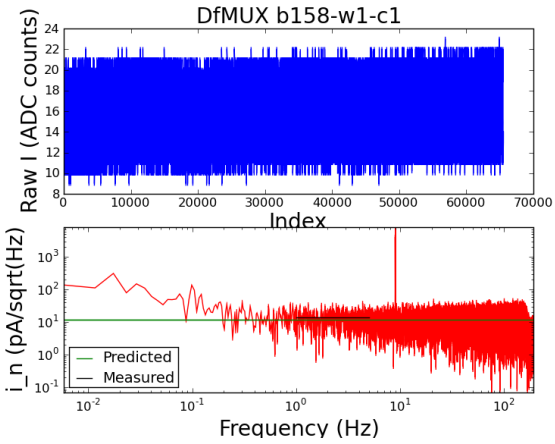
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 465384 Hz
Carrier gain is : 2
Carrier amplitude : 1.22
Nuller gain is : 2
Nuller amplitude : 0.457
Voltage bias is : 6.49528 uV_RMS
R normal is : 1.66 ohm
R is : 1.494 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 2.96987036441 pA/sqrt(Hz)
20 ohms noise : 1.70767545954 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.49434617996 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.49617213118 pA/sqrt(Hz)
Carrier shot noise : 2.35885705274 pA/sqrt(Hz)
Carrier digitization noise : 0.294801367989 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 : 5.95565945283 pA/sqrt(Hz)
Phonon noise : 2.60950213926 pA/sqrt(Hz)

Predicted noise : 11.5562613666 pA/sqrt(Hz)
Measured noise : 14.0842271104 pA/sqrt(Hz)
Standard deviation : 7.37750238088 pA/sqrt(Hz)
Measured/predicted : 1.2187529049



b158-w1-c2

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

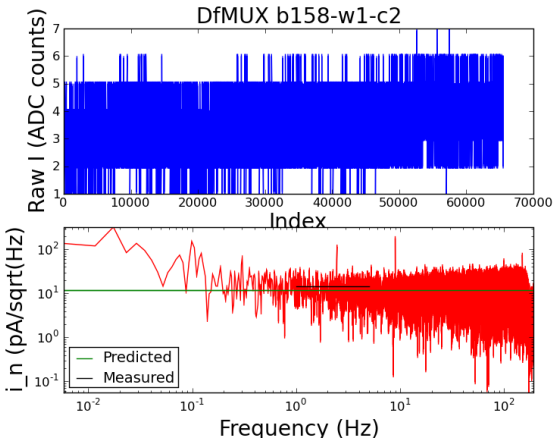
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 541296 Hz
Carrier gain is : 2
Carrier amplitude : 1.24
Nuller gain is : 2
Nuller amplitude : 0.452
Voltage bias is : 6.60176 uV_RMS
R normal is : 1.58 ohm
R is : 1.422 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.01814033463 pA/sqrt(Hz)
20 ohms noise : 1.73543069241 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.55114057343 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.62256059351 pA/sqrt(Hz)
Carrier shot noise : 2.43757535953 pA/sqrt(Hz)
Carrier digitization noise : 0.309728019532 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 : 2.52950800592 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.10457392328 pA/sqrt(Hz)
Phonon noise : 2.56741339508 pA/sqrt(Hz)

Predicted noise : 11.6992623759 pA/sqrt(Hz)
Measured noise : 14.2667750863 pA/sqrt(Hz)
Standard deviation : 8.81462077234 pA/sqrt(Hz)
Measured/predicted : 1.21945936657



b158-w1-c3

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

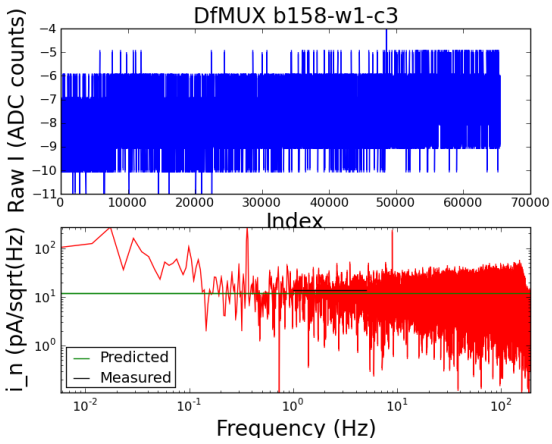
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 625419 Hz
Carrier gain is : 2
Carrier amplitude : 1.23
Nuller gain is : 2
Nuller amplitude : 0.45
Voltage bias is : 6.54852 uV_RMS
R normal is : 1.55 ohm
R is : 1.395 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.07898370829 pA/sqrt(Hz)
20 ohms noise : 1.77041563227 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.62272881946 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.67331983081 pA/sqrt(Hz)
Carrier shot noise : 2.45110806338 pA/sqrt(Hz)
Carrier digitization noise : 0.315722755394 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 : 2.52390554498 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.1633673243 pA/sqrt(Hz)
Phonon noise : 2.58828667471 pA/sqrt(Hz)

Predicted noise : 11.790641478 pA/sqrt(Hz)
Measured noise : 13.9616986808 pA/sqrt(Hz)
Standard deviation : 7.6789668563 pA/sqrt(Hz)
Measured/predicted : 1.18413393426



b158-w1-c4

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

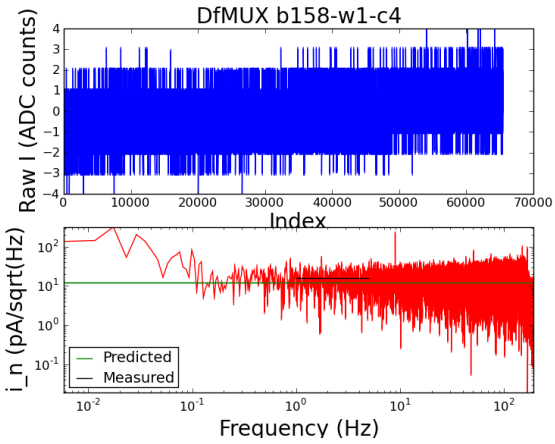
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 707955 Hz
Carrier gain is : 2
Carrier amplitude : 1.11
Nuller gain is : 2
Nuller amplitude : 0.49
Voltage bias is : 5.90964 uV_RMS
R normal is : 1.52 ohm
R is : 1.368 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.14575300371 pA/sqrt(Hz)
20 ohms noise : 1.80880797713 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.70128949846 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.72608272221 pA/sqrt(Hz)
Carrier shot noise : 2.35134008388 pA/sqrt(Hz)
Carrier digitization noise : 0.321954125567 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 : 2.63369137144 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.22389284172 pA/sqrt(Hz)
Phonon noise : 2.86810145036 pA/sqrt(Hz)

Predicted noise : 11.9499007493 pA/sqrt(Hz)
Measured noise : 15.829735721 pA/sqrt(Hz)
Standard deviation : 8.46961339083 pA/sqrt(Hz)
Measured/predicted : 1.32467507915



b158-w1-c5

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

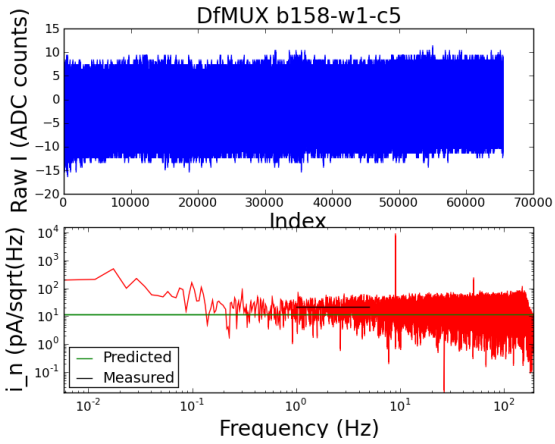
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 801198 Hz
Carrier gain is : 2
Carrier amplitude : 1.25
Nuller gain is : 2
Nuller amplitude : 0.531
Voltage bias is : 6.655 uV_RMS
R normal is : 1.63 ohm
R is : 1.467 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.22903612452 pA/sqrt(Hz)
20 ohms noise : 1.8566957716 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.79928032612 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.54211394954 pA/sqrt(Hz)
Carrier shot noise : 2.40955562395 pA/sqrt(Hz)
Carrier digitization noise : 0.300227160038 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 : 2.74166319157 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 6.01021625123 pA/sqrt(Hz)
Phonon noise : 2.54687408792 pA/sqrt(Hz)

Predicted noise : 11.8221327307 pA/sqrt(Hz)
Measured noise : 22.2840916502 pA/sqrt(Hz)
Standard deviation : 11.5866967102 pA/sqrt(Hz)
Measured/predicted : 1.88494683302



b158-w1-c6

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

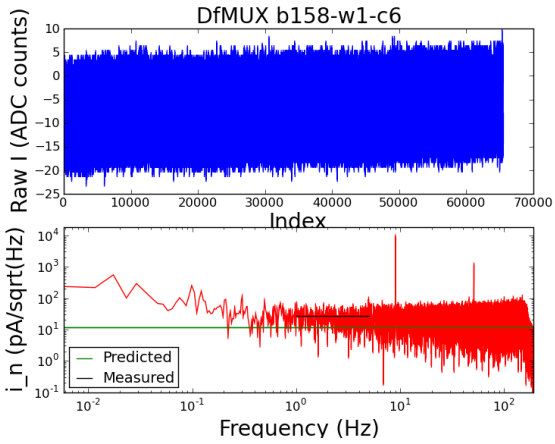
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

Demod gain is : 1
Demod frequency is : 888360 Hz
Carrier gain is : 2
Carrier amplitude : 1.37
Nuller gain is : 2
Nuller amplitude : 0.552
Voltage bias is : 7.29388 uV_RMS
R normal is : 1.66 ohm
R is : 1.494 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.31385864261 pA/sqrt(Hz)
20 ohms noise : 1.9054687195 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 3.89908240692 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.49617213118 pA/sqrt(Hz)
Carrier shot noise : 2.49966604909 pA/sqrt(Hz)
Carrier digitization noise : 0.294801367989 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 : 2.7953512037 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.95565945283 pA/sqrt(Hz)
Phonon noise : 2.3237902262 pA/sqrt(Hz)

Predicted noise : 11.8336457584 pA/sqrt(Hz)
Measured noise : 26.7693819018 pA/sqrt(Hz)
Standard deviation : 13.918511083 pA/sqrt(Hz)
Measured/predicted : 2.26214156216



b158-w1-c7

Removing gradient
Applying Hanning window
Correcting PSD for Hanning window

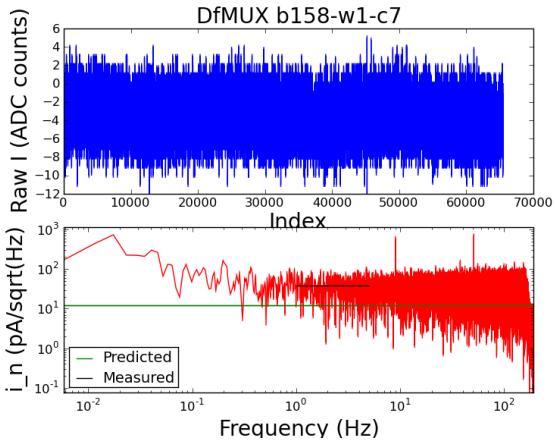
Measured I increased by 5% for DMFD imperfections.

Measured value is the average between 1.0 and 5.0Hz.

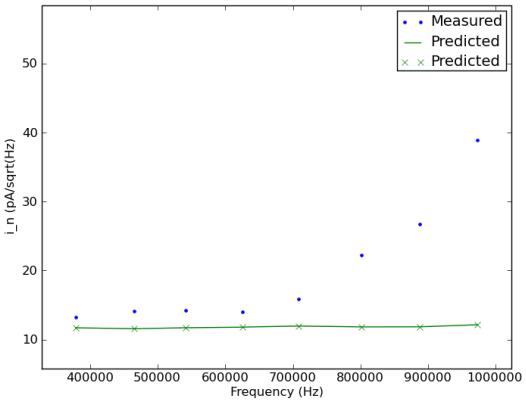
Demod gain is : 1
Demod frequency is : 973512 Hz
Carrier gain is : 2
Carrier amplitude : 1.54
Nuller gain is : 2
Nuller amplitude : 1.172
Voltage bias is : 8.19896 uV_RMS
R normal is : 1.75 ohm
R is : 1.575 ohm
SQUID feedback loop: 10000 ohm
SQUID flux bias : -0.336486816406 V
SQUID current bias : 4.32904052734 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 : 3.40270823908 pA/sqrt(Hz)
20 ohms noise : 1.95655723747 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 : 2.07548474489 pA/sqrt(Hz)
Current bias shot noise : 4.00362274368 pA/sqrt(Hz)
Demod digitization stage noise : 0.0567548224876 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 : 2.36779756443 pA/sqrt(Hz)
Carrier shot noise : 2.58117284855 pA/sqrt(Hz)
Carrier digitization noise : 0.279640154778 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 : 4.07315227705 pA/sqrt(Hz)
Nuller digitization noise : 0.895291465886 pA/sqrt(Hz)
Johnson noise : 5.80049258992 pA/sqrt(Hz)
Phonon noise : 2.0672679285 pA/sqrt(Hz)

Predicted noise : 12.1351723546 pA/sqrt(Hz)
Measured noise : 38.9536367819 pA/sqrt(Hz)
Standard deviation : 20.1023020343 pA/sqrt(Hz)
Measured/predicted : 3.20997804098



b158-w1


Measured
Predicted
Predicted
i_n (pA/sqrt(Hz)
Frequency (Hz)
10
20
30
40
50
400000
500000
600000
700000
800000
900000
1000000