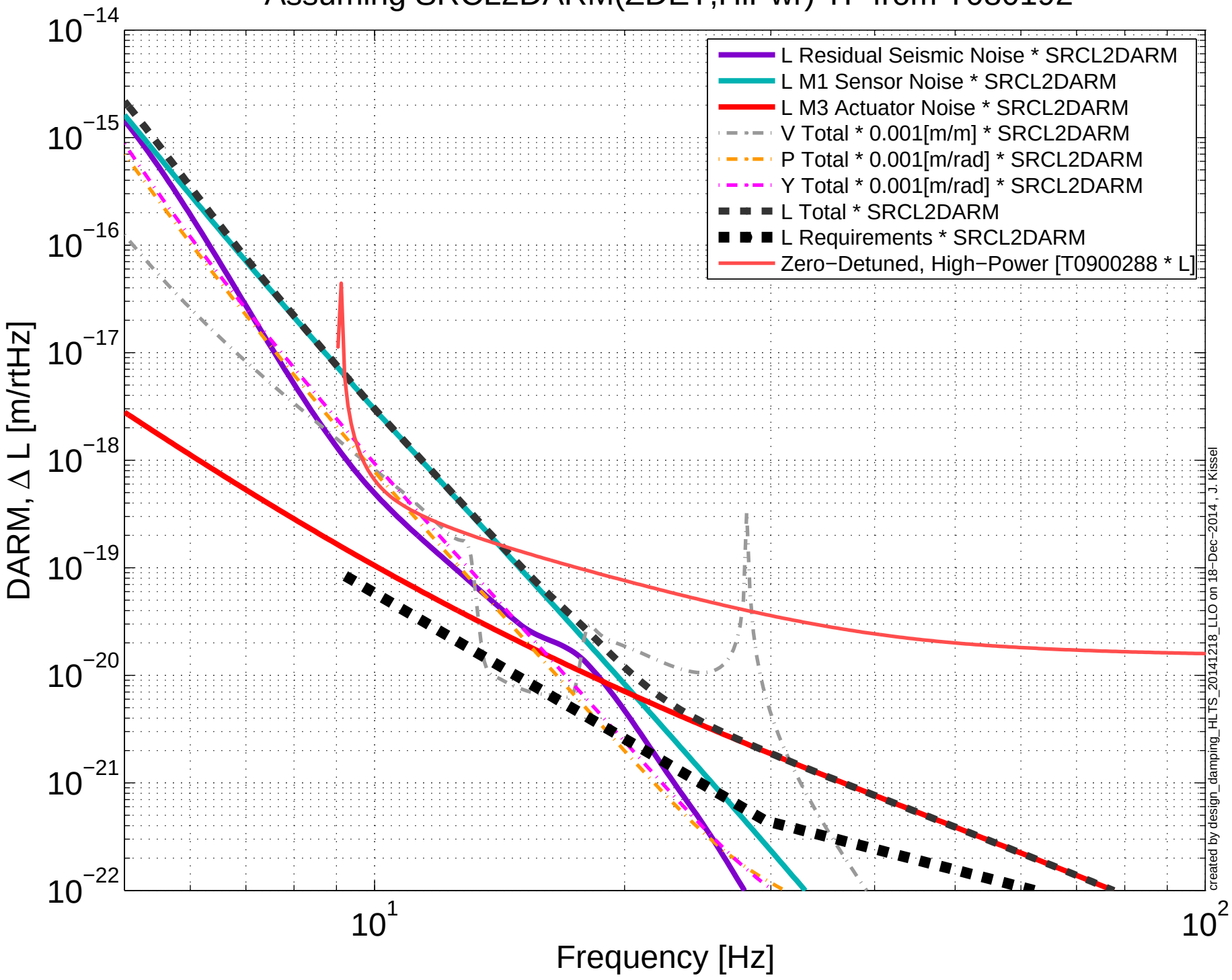
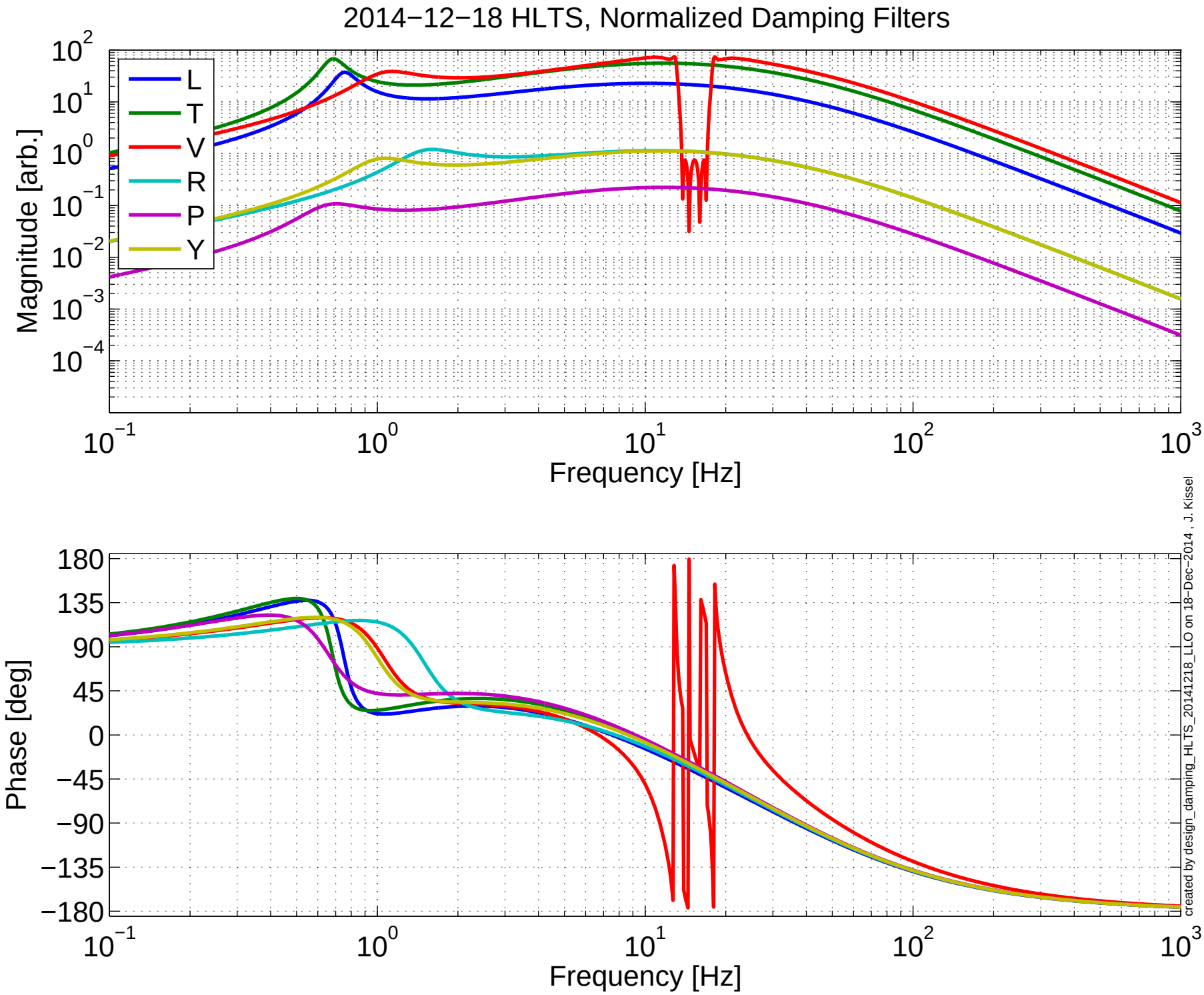
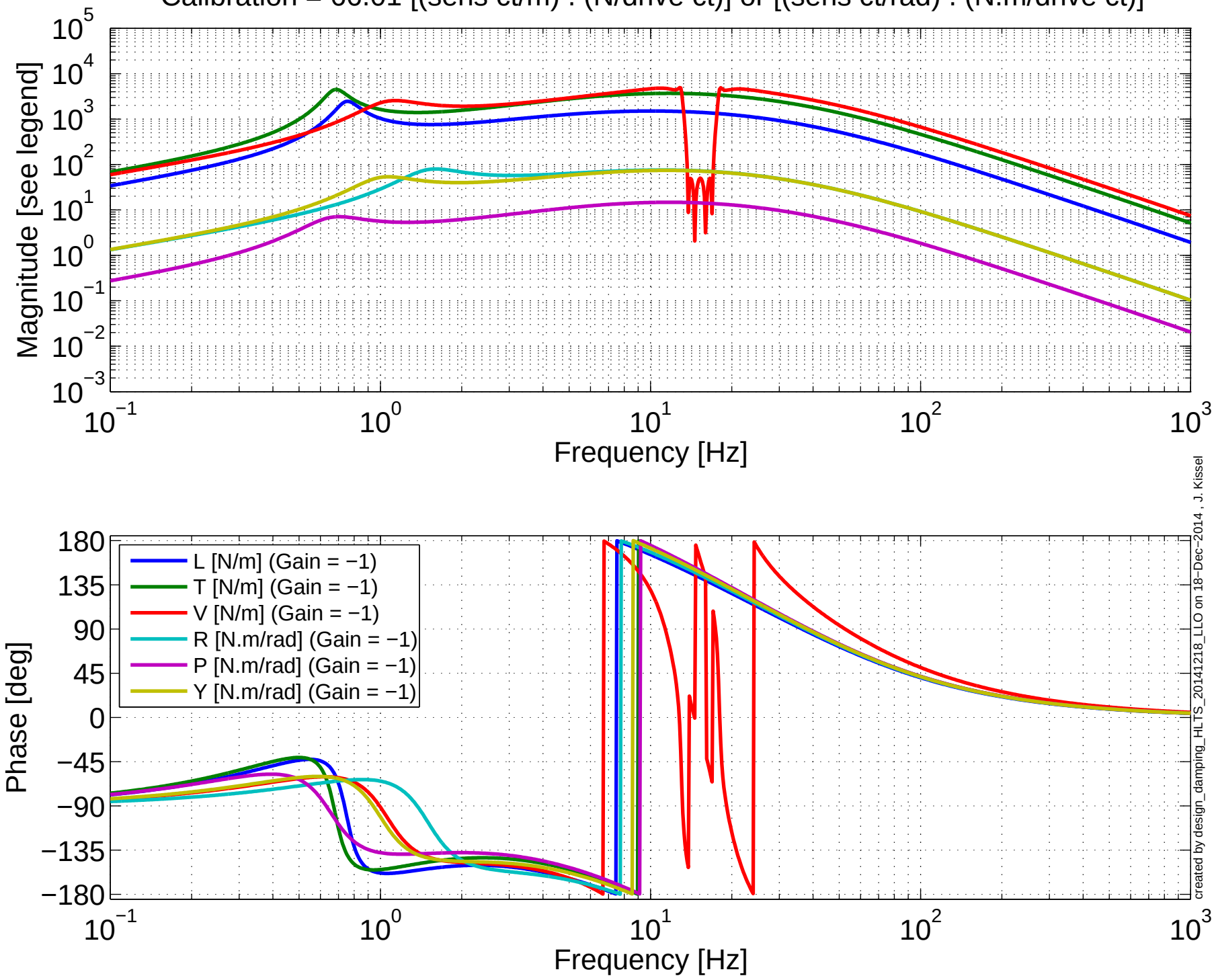
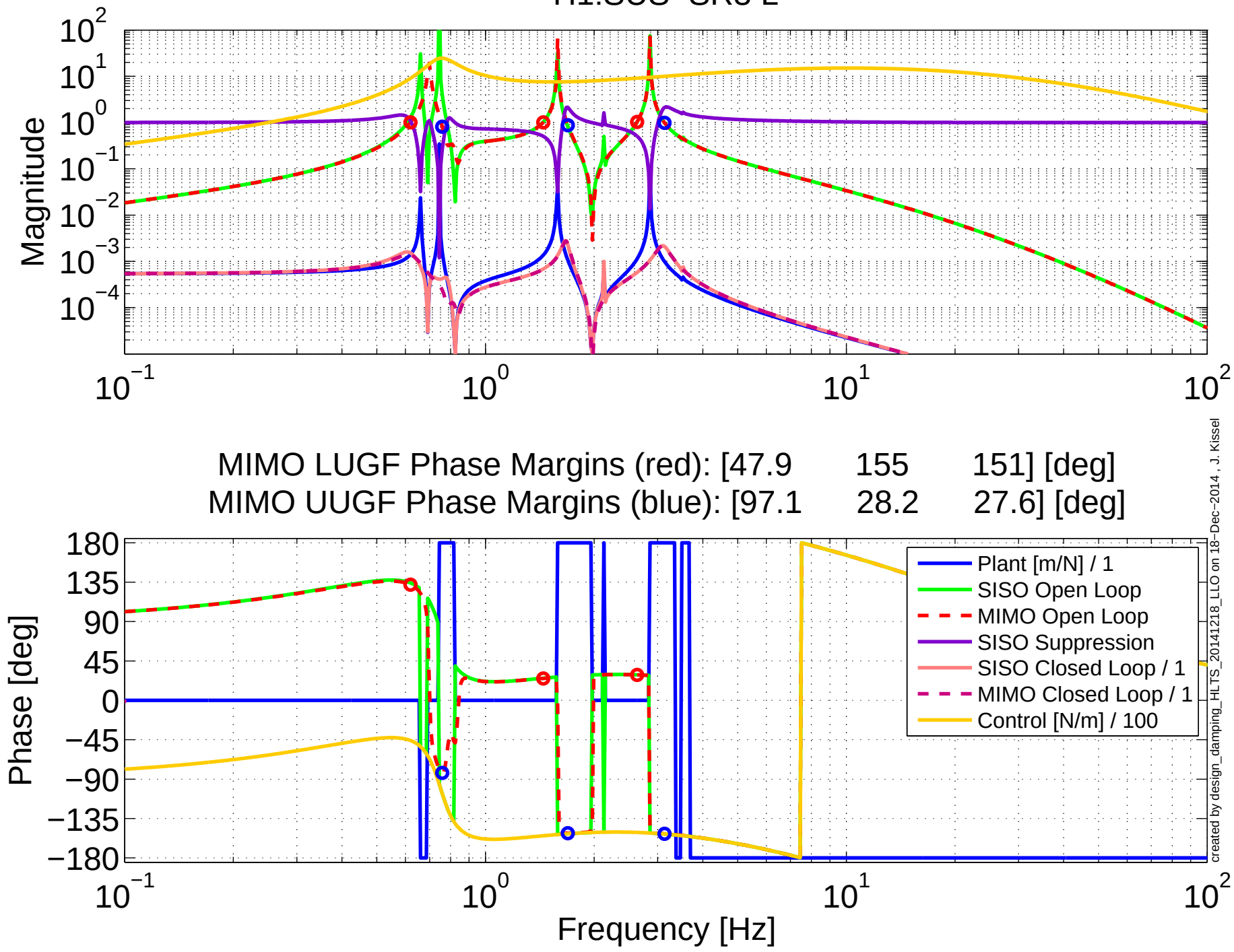
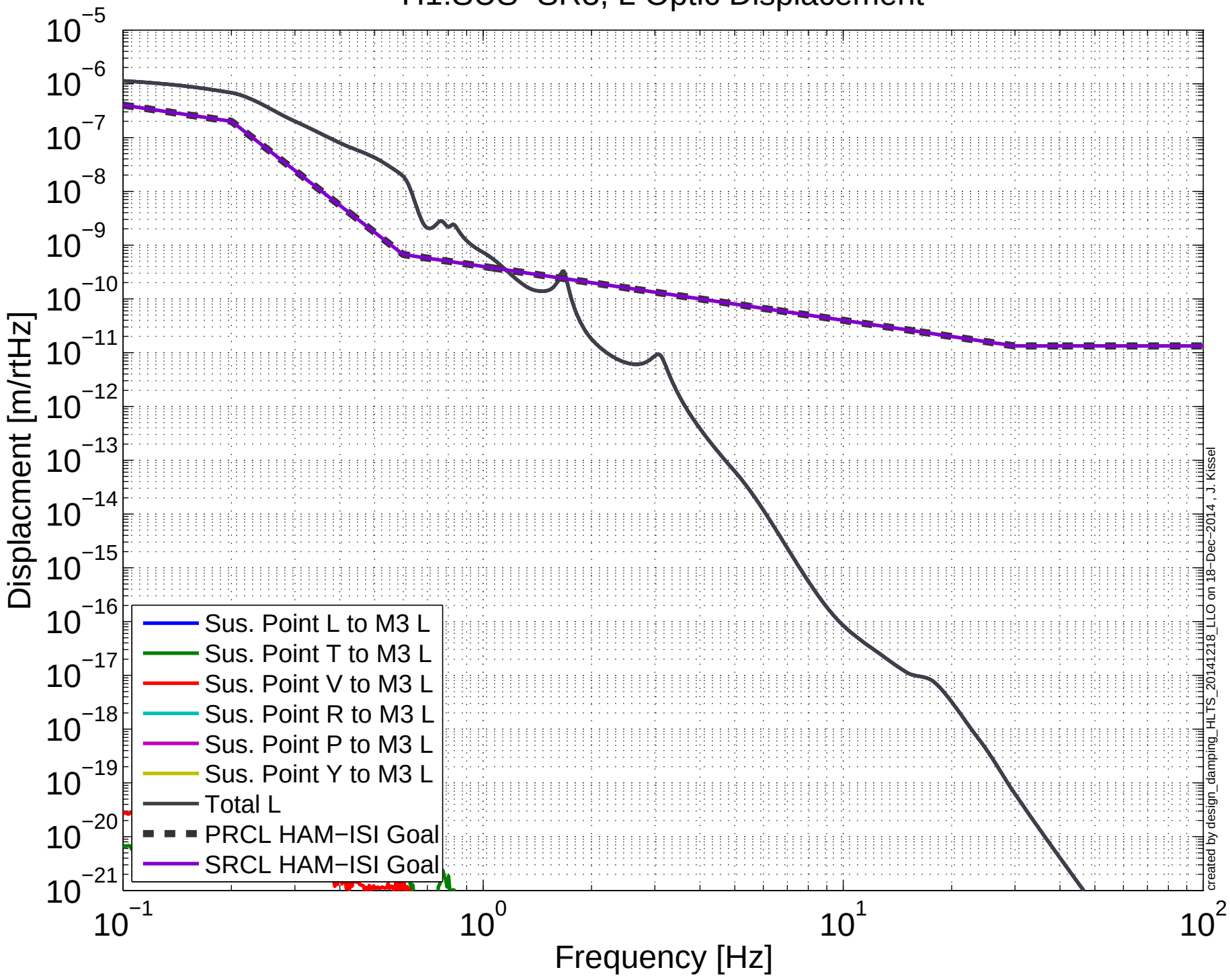
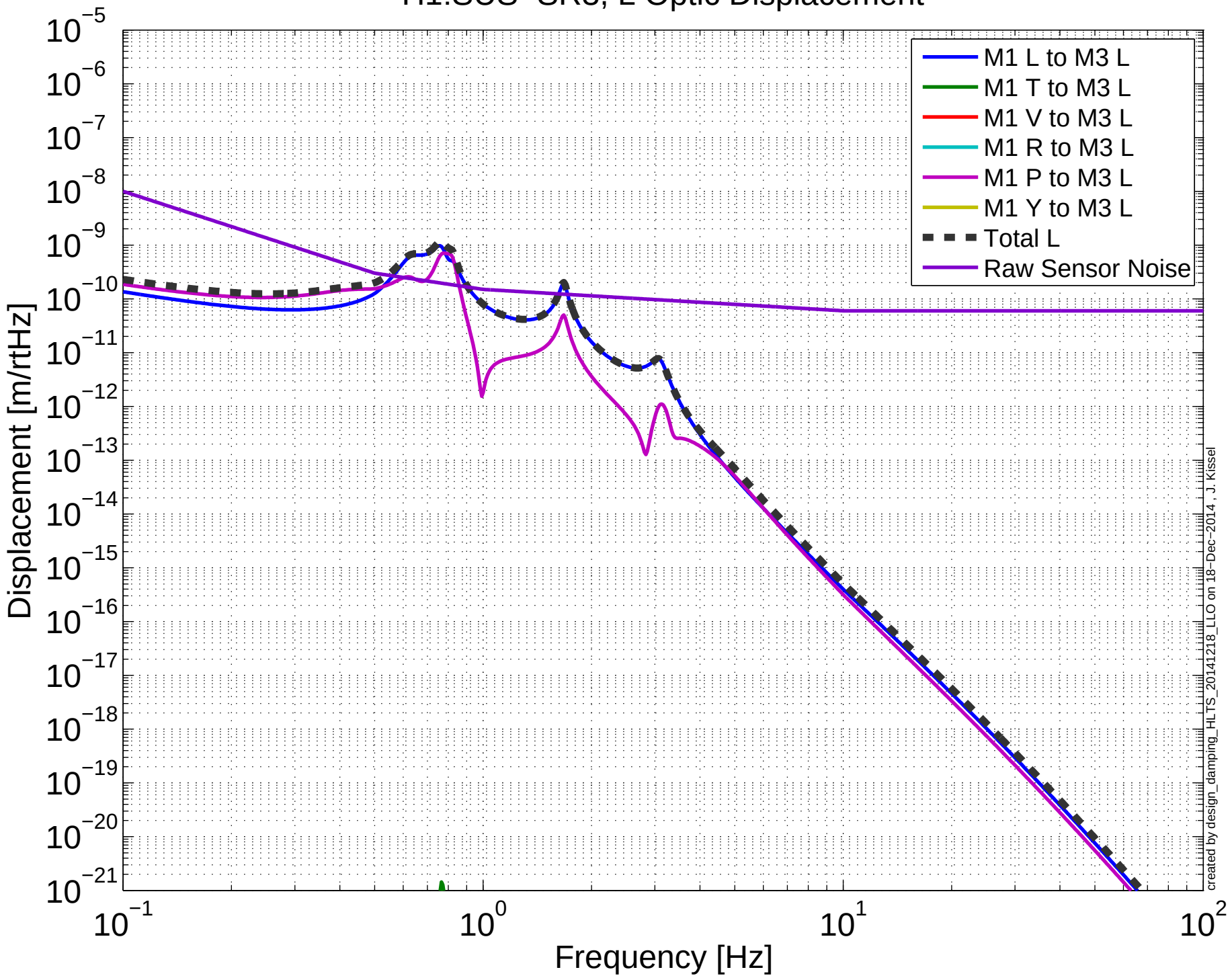

HLTS Damping Loop Performance; Differential Arm Displacement
Assuming SRCL2DARM(ZDET,HiPwr) TF from T080192
L Residual Seismic Noise * SRCL2DARM
L M1 Sensor Noise * SRCL2DARM
L M3 Actuator Noise * SRCL2DARM
V Total * 0.001[m/m] * SRCL2DARM
P Total * 0.001[m/rad] * SRCL2DARM
Y Total * 0.001[m/rad] * SRCL2DARM
L Total * SRCL2DARM
L Requirements * SRCL2DARM
Zero−Detuned, High−Power [T0900288 * L]
DARM, Δ L [m/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

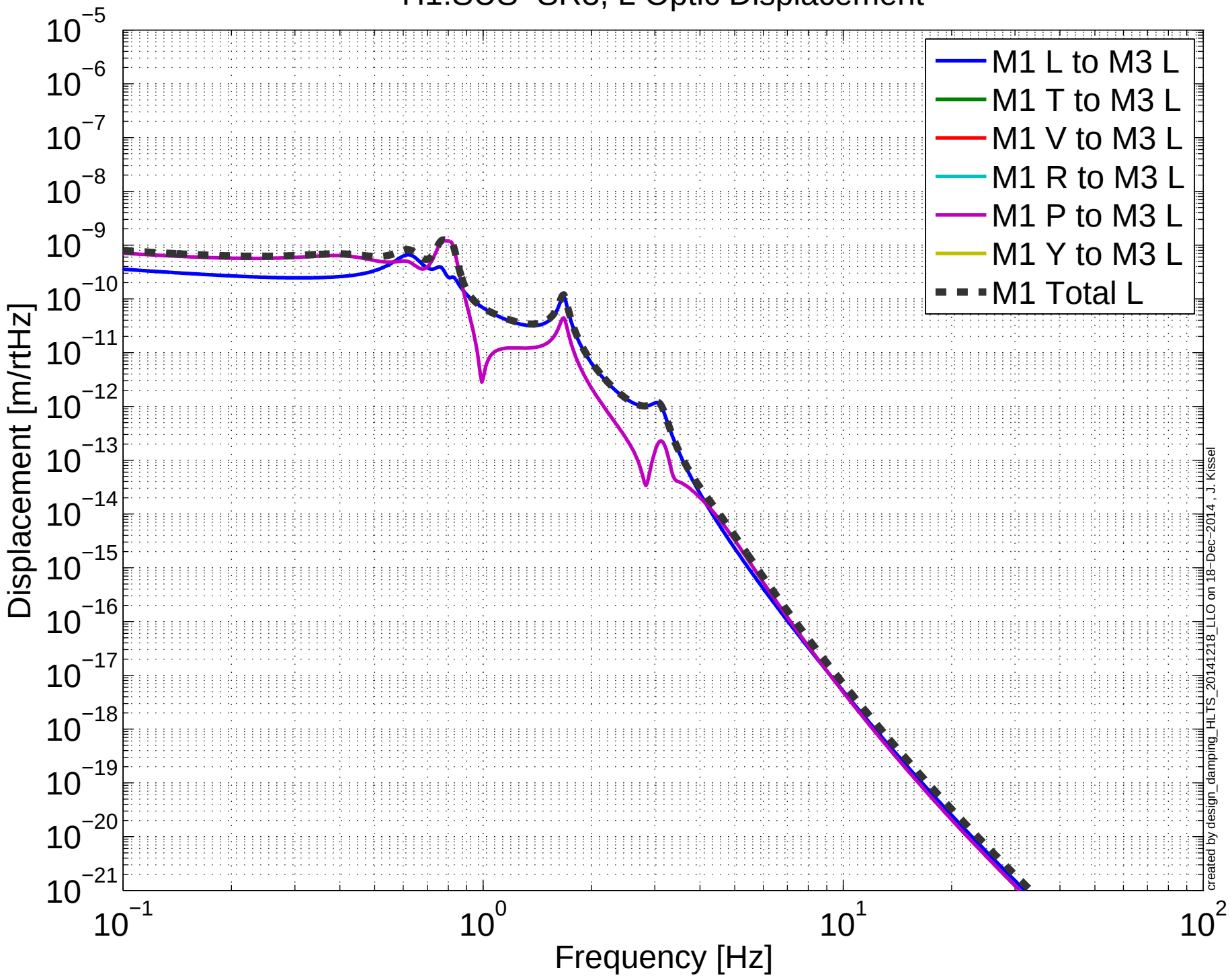

2014−12−18 HLTS, Normalized Damping Filters
Magnitude [arb.]
Frequency [Hz]
L
T
V
R
P
Y
Phase [deg]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

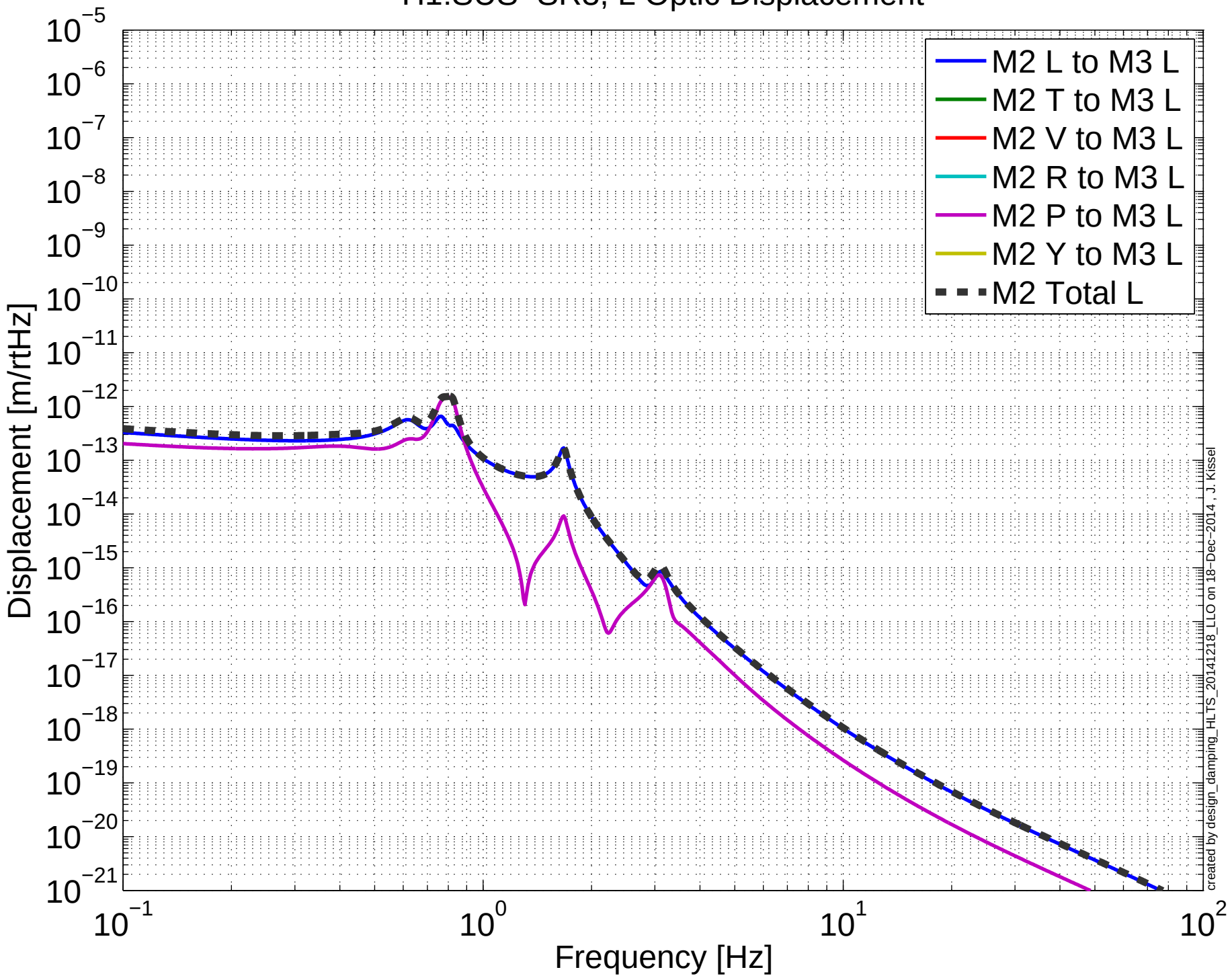

2014−12−18 HLTS, Calibrated Damping Filters
Calibration = 66.01 [(sens ct/m) . (N/drive ct)] or [(sens ct/rad) . (N.m/drive ct)]
Magnitude [see legend]
Frequency [Hz]
Phase [deg]
Frequency [Hz]
L [N/m] (Gain = −1)
T [N/m] (Gain = −1)
V [N/m] (Gain = −1)
R [N.m/rad] (Gain = −1)
P [N.m/rad] (Gain = −1)
Y [N.m/rad] (Gain = −1)
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

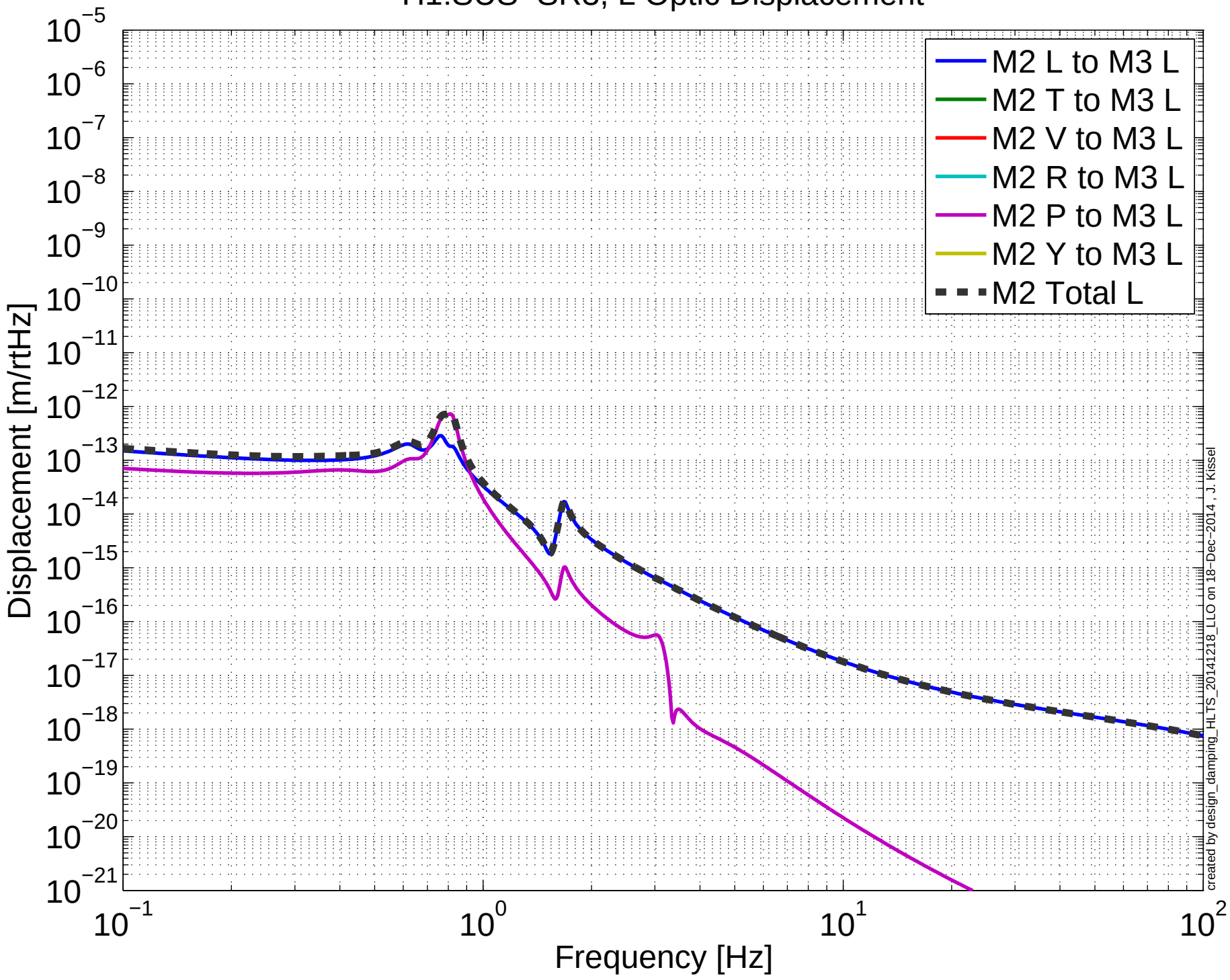

Damping Loop Design
H1:SUS−SR3 L
Magnitude
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-1}
10^{0}
10^{1}
10^{2}
MIMO LUGF Phase Margins (red): [47.9 155 151] [deg]
MIMO UUGF Phase Margins (blue): [97.1 28.2 27.6] [deg]
Phase [deg]
180
135
90
45
0
−45
−90
−135
−180
Frequency [Hz]
Plant [m/N] / 1
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 1
MIMO Closed Loop / 1
Control [N/m] / 100
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

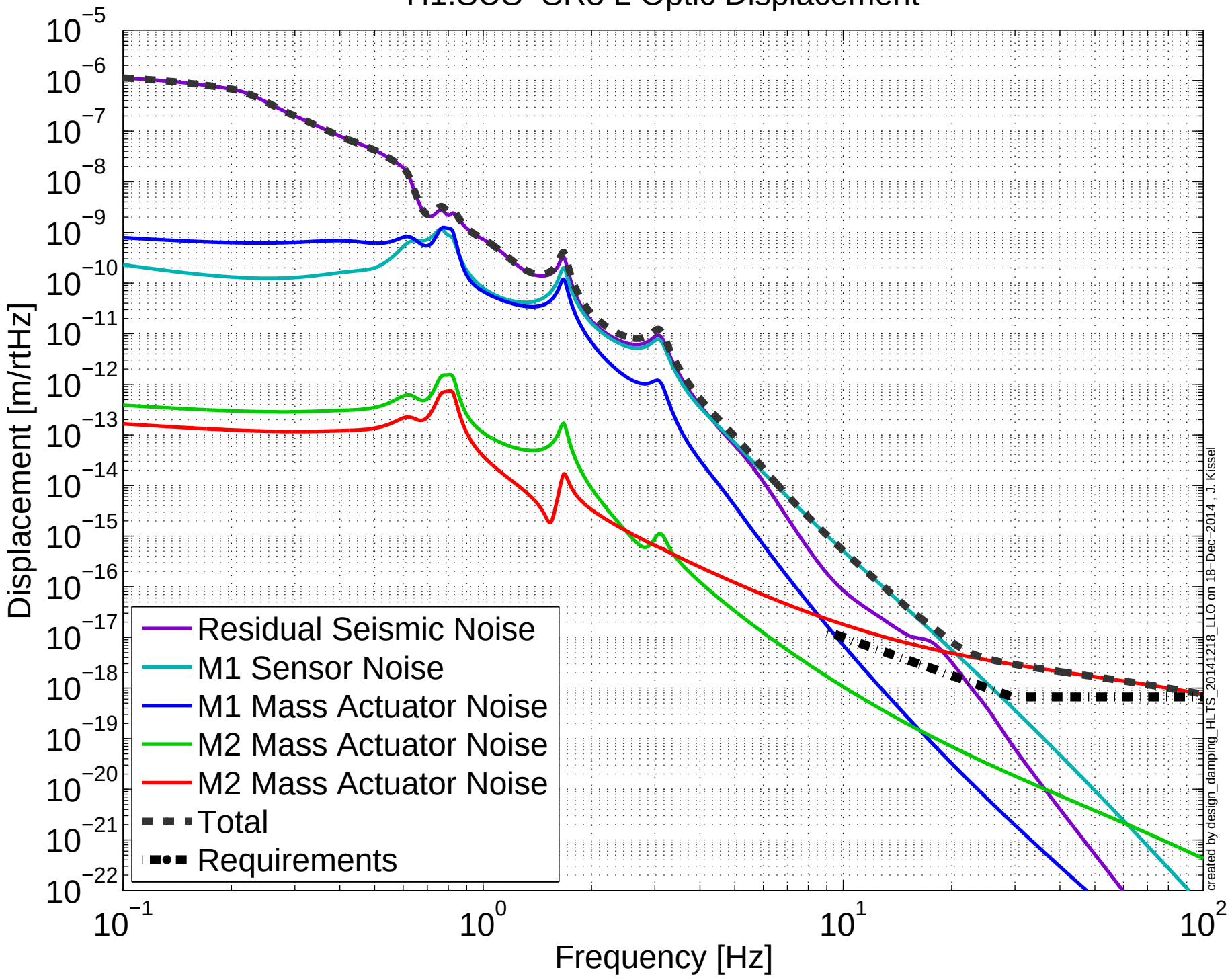

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, L Optic Displacement
Displacment [m/rtHz]
Frequency [Hz]
Sus. Point L to M3 L
Sus. Point T to M3 L
Sus. Point V to M3 L
Sus. Point R to M3 L
Sus. Point P to M3 L
Sus. Point Y to M3 L
Total L
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

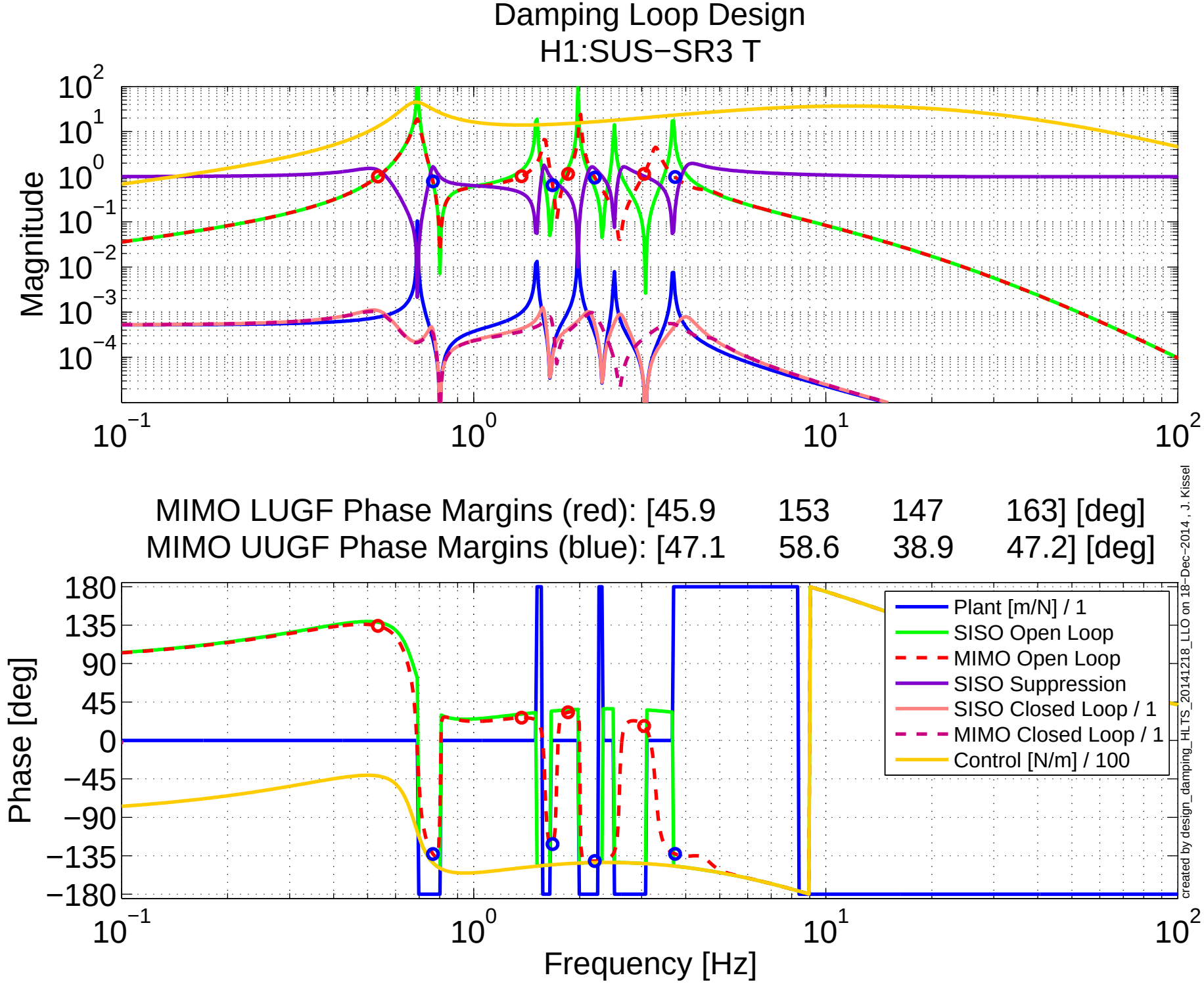

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, L Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M1 L to M3 L
M1 T to M3 L
M1 V to M3 L
M1 R to M3 L
M1 P to M3 L
M1 Y to M3 L
Total L
Raw Sensor Noise
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

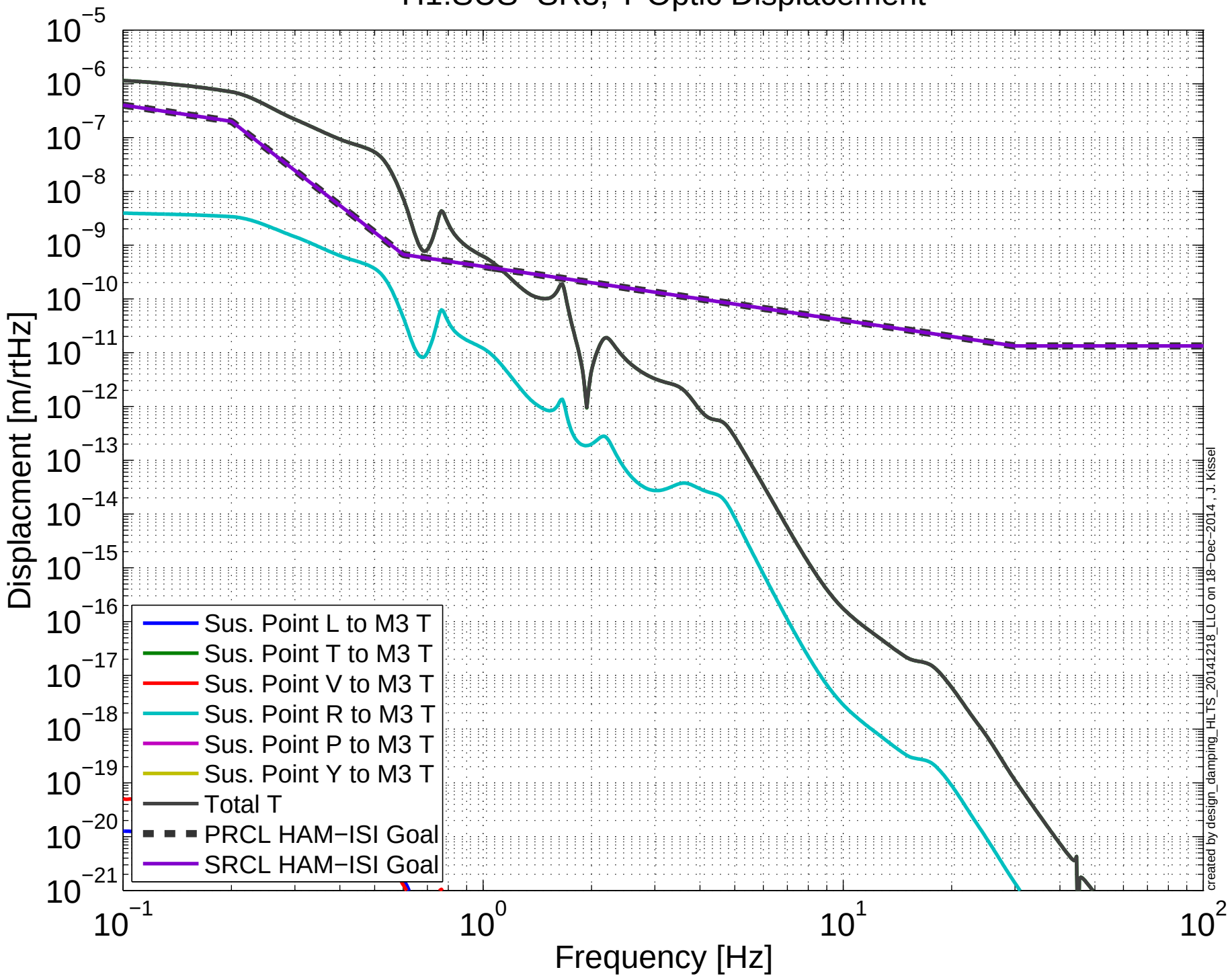

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, L Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M1 L to M3 L
M1 T to M3 L
M1 V to M3 L
M1 R to M3 L
M1 P to M3 L
M1 Y to M3 L
M1 Total L
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

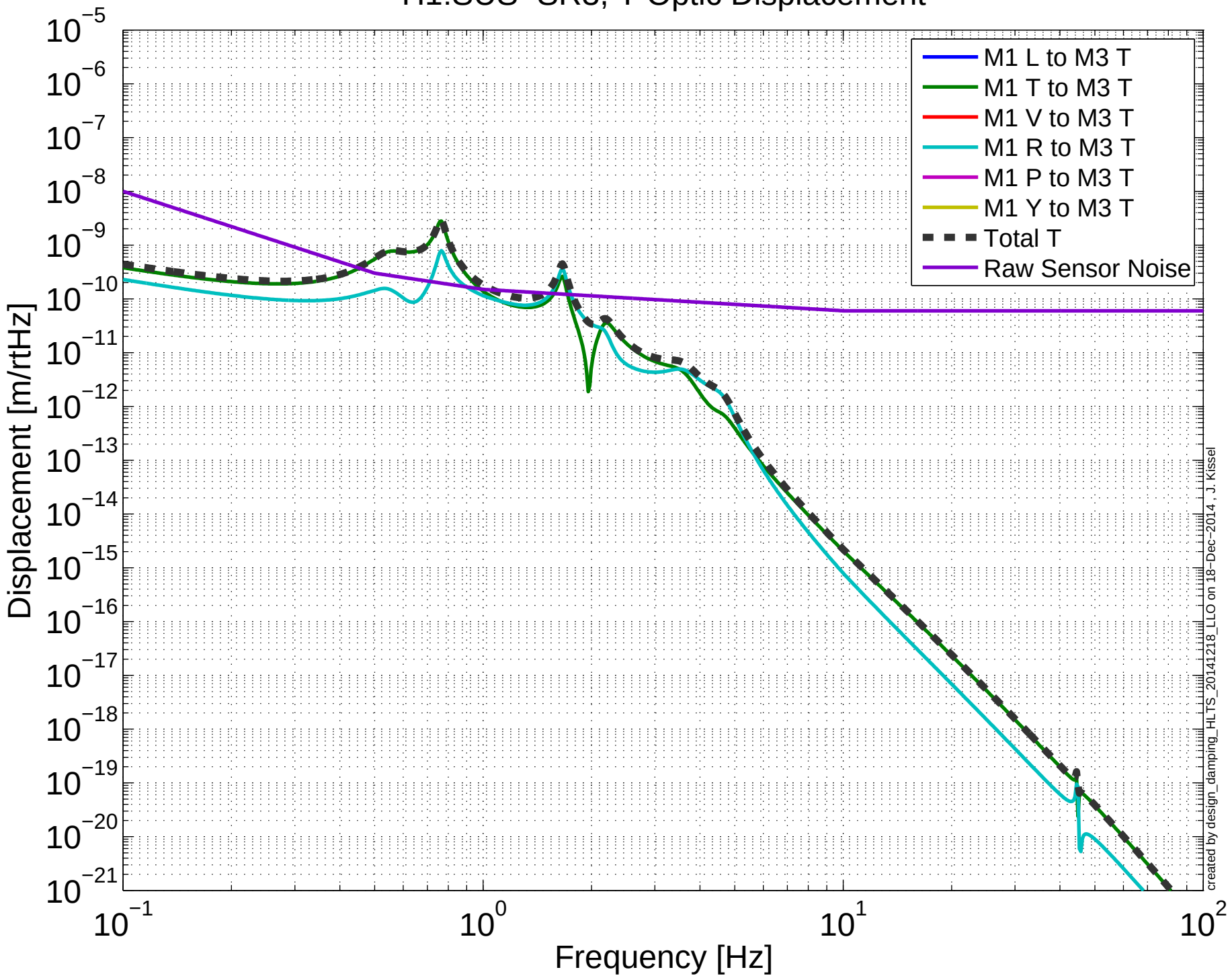

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, L Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M2 L to M3 L
M2 T to M3 L
M2 V to M3 L
M2 R to M3 L
M2 P to M3 L
M2 Y to M3 L
M2 Total L
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

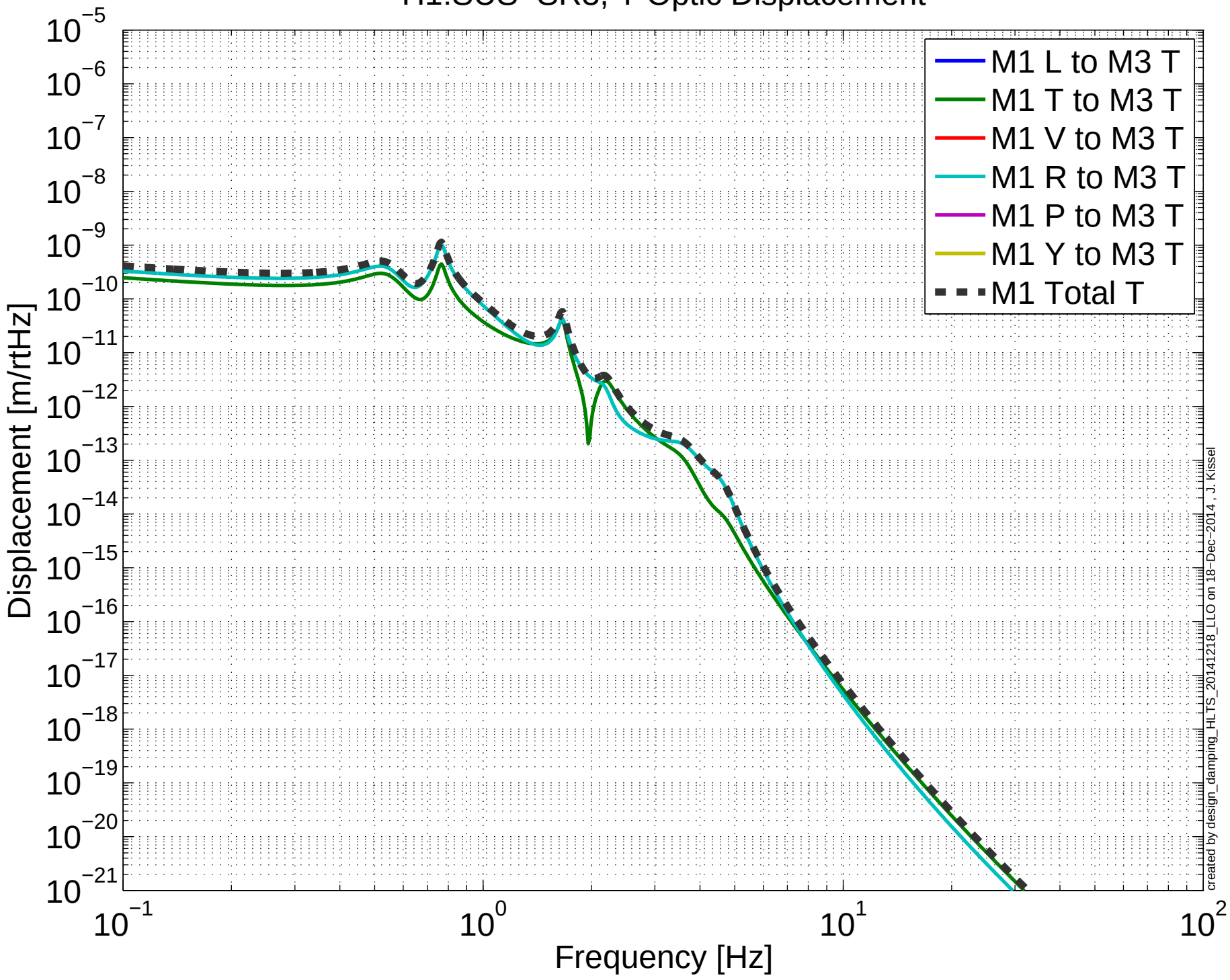

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, L Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M2 L to M3 L
M2 T to M3 L
M2 V to M3 L
M2 R to M3 L
M2 P to M3 L
M2 Y to M3 L
M2 Total L
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

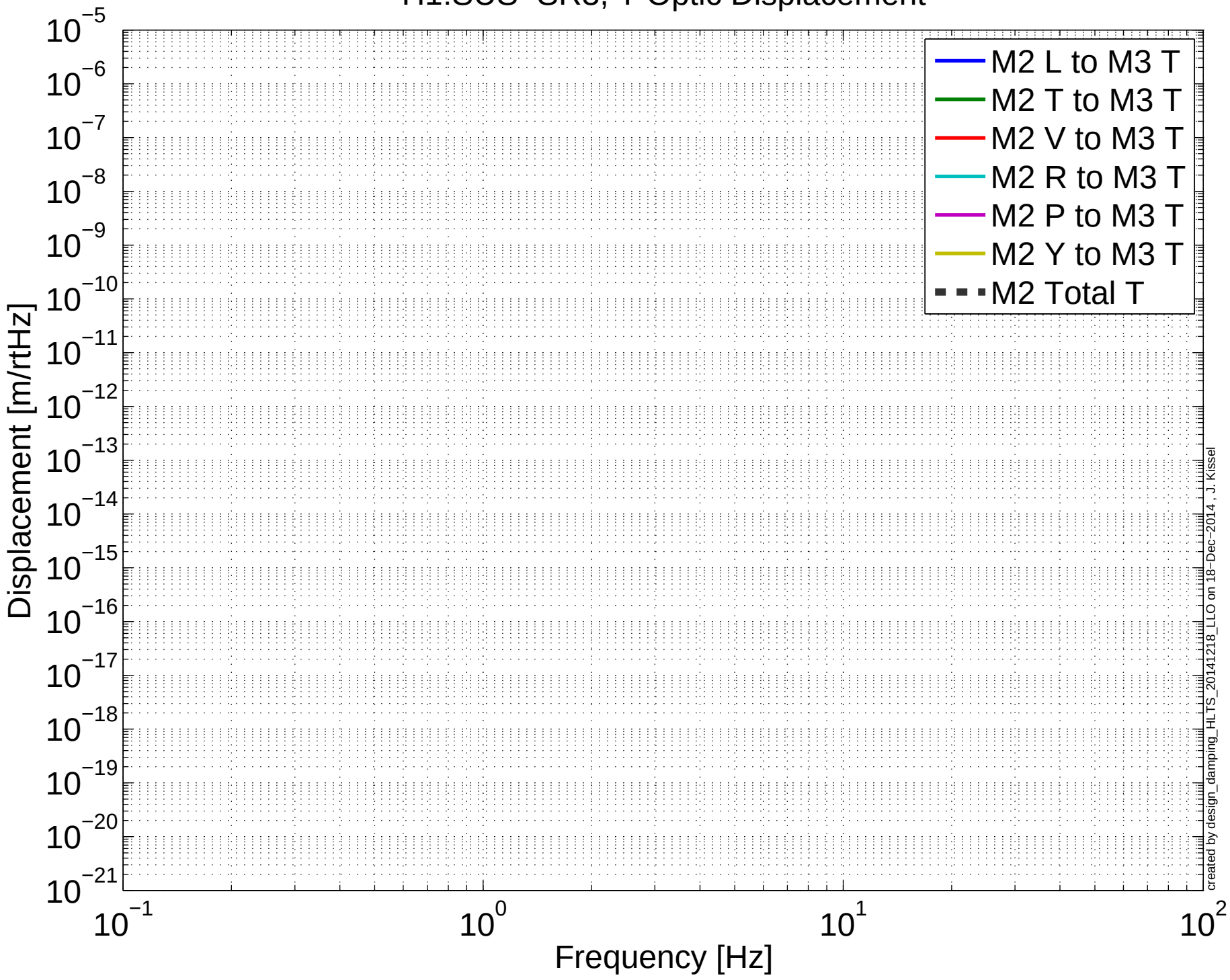

Damping Loop Performance
H1:SUS−SR3 L Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

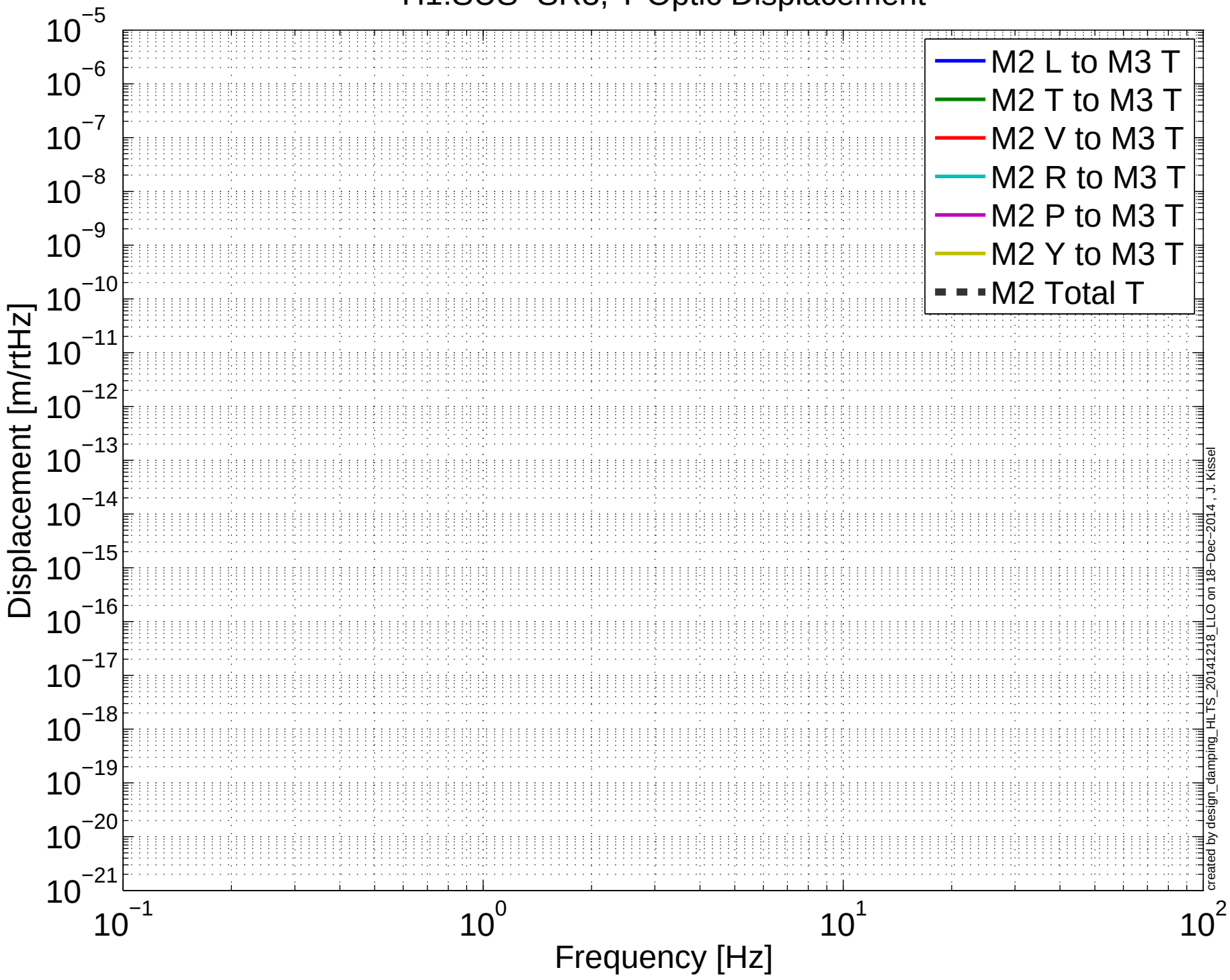

Damping Loop Design
H1:SUS−SR3 T
Magnitude
MIMO LUGF Phase Margins (red): [45.9 153 147 163] [deg]
MIMO UUGF Phase Margins (blue): [47.1 58.6 38.9 47.2] [deg]
Phase [deg]
Frequency [Hz]
Plant [m/N] / 1
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 1
MIMO Closed Loop / 1
Control [N/m] / 100
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

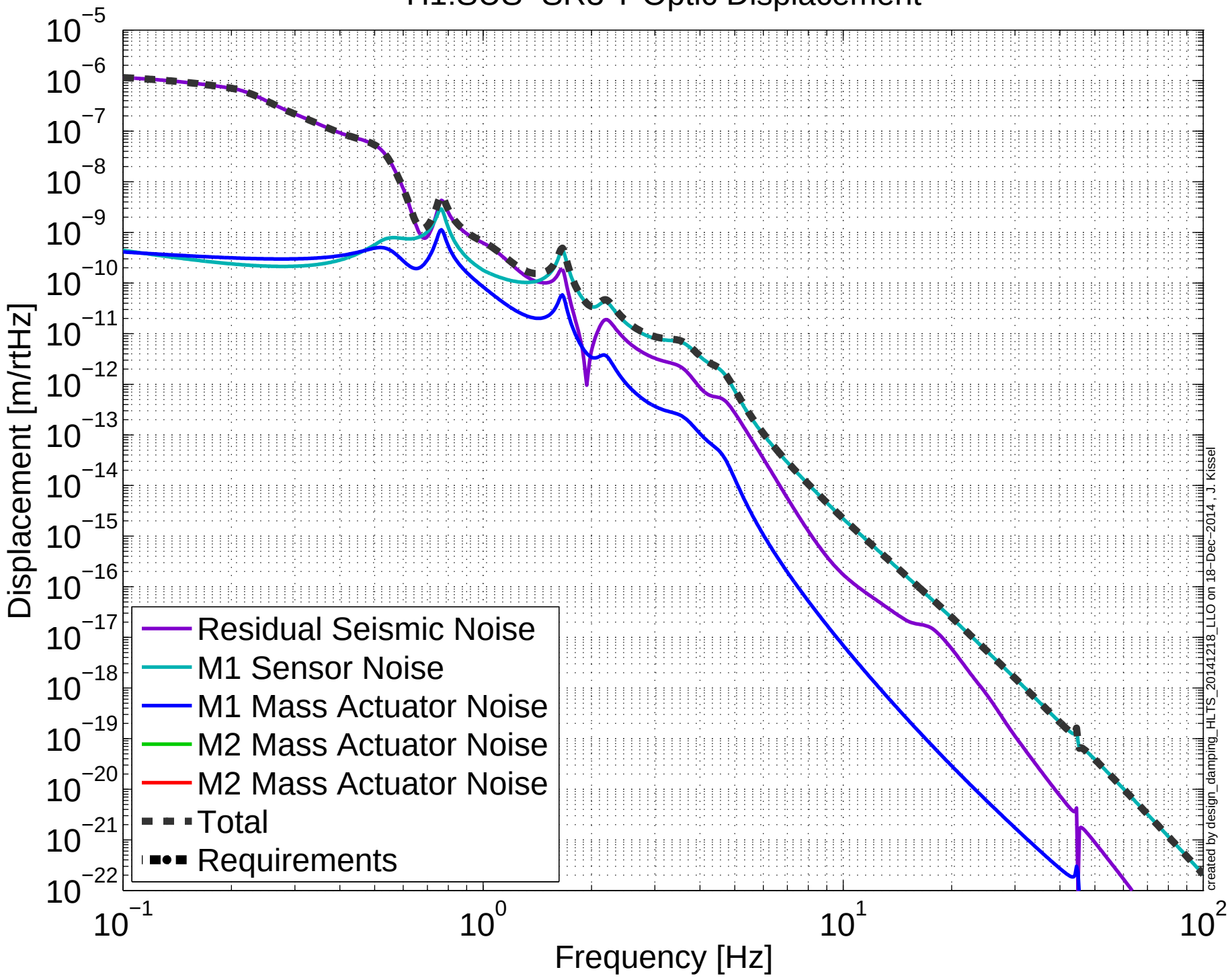

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, T Optic Displacement
Displacment [m/rtHz]
Frequency [Hz]
Sus. Point L to M3 T
Sus. Point T to M3 T
Sus. Point V to M3 T
Sus. Point R to M3 T
Sus. Point P to M3 T
Sus. Point Y to M3 T
Total T
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

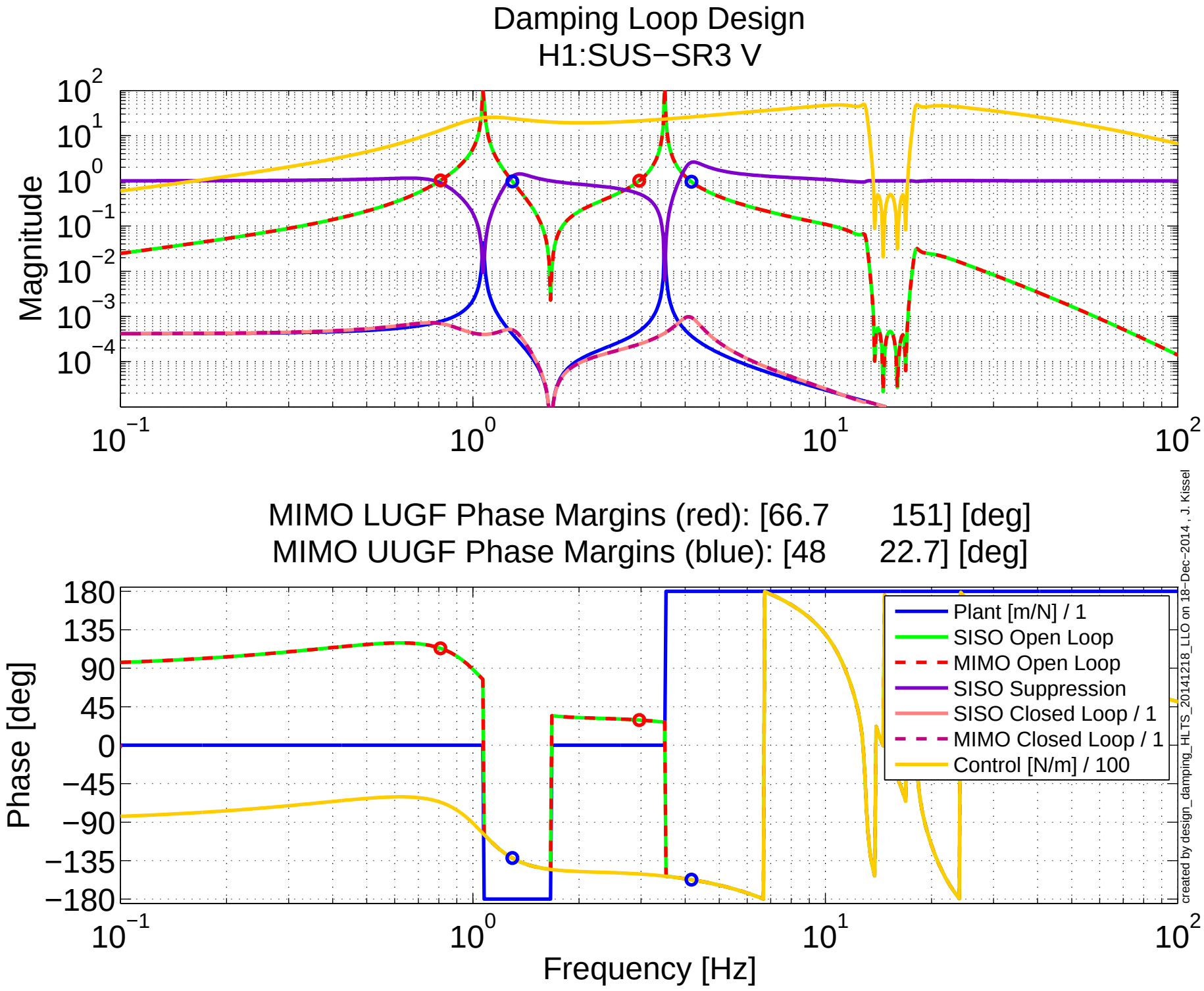

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, T Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M1 L to M3 T
M1 T to M3 T
M1 V to M3 T
M1 R to M3 T
M1 P to M3 T
M1 Y to M3 T
Total T
Raw Sensor Noise
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

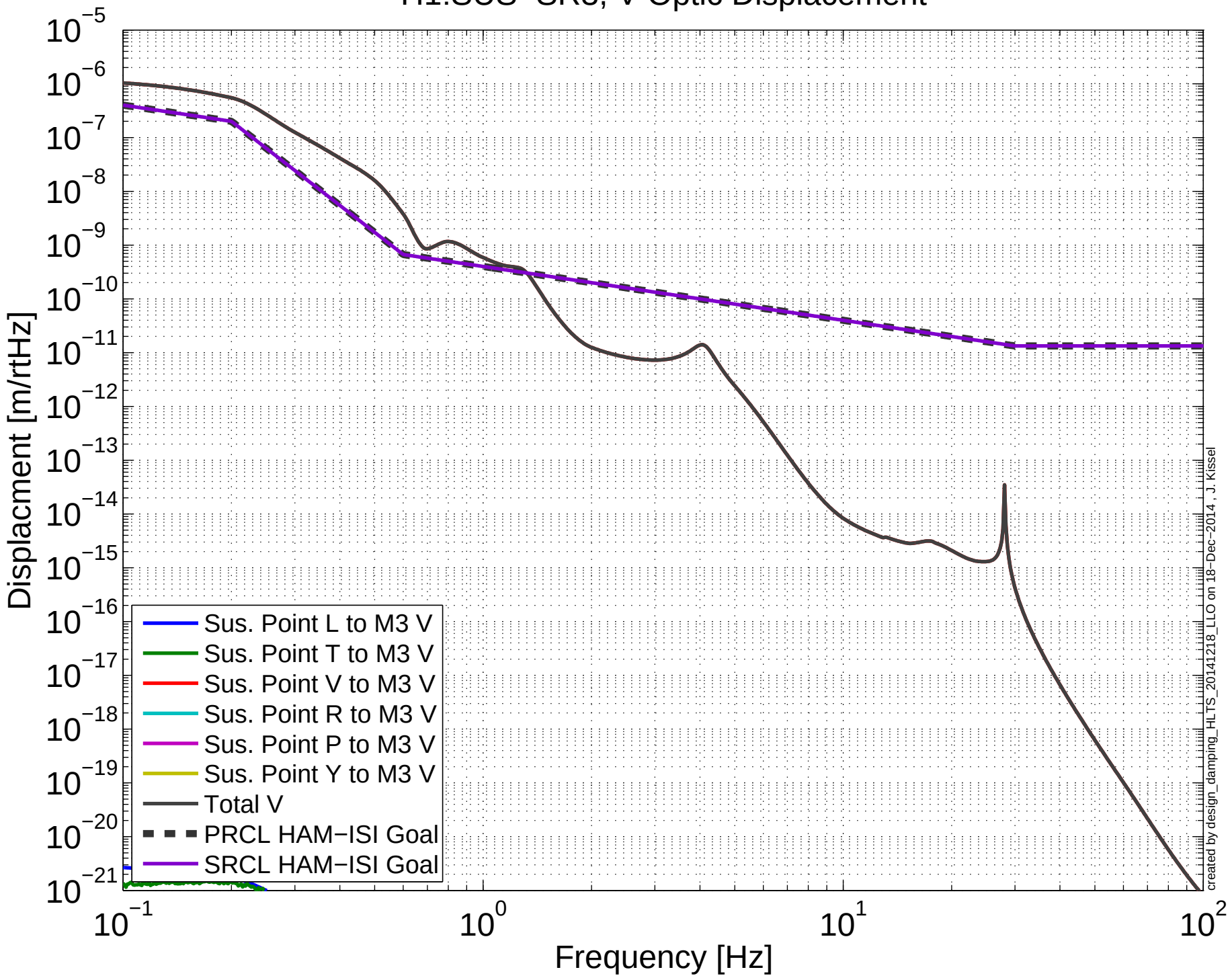

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, T Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M1 L to M3 T
M1 T to M3 T
M1 V to M3 T
M1 R to M3 T
M1 P to M3 T
M1 Y to M3 T
M1 Total T
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

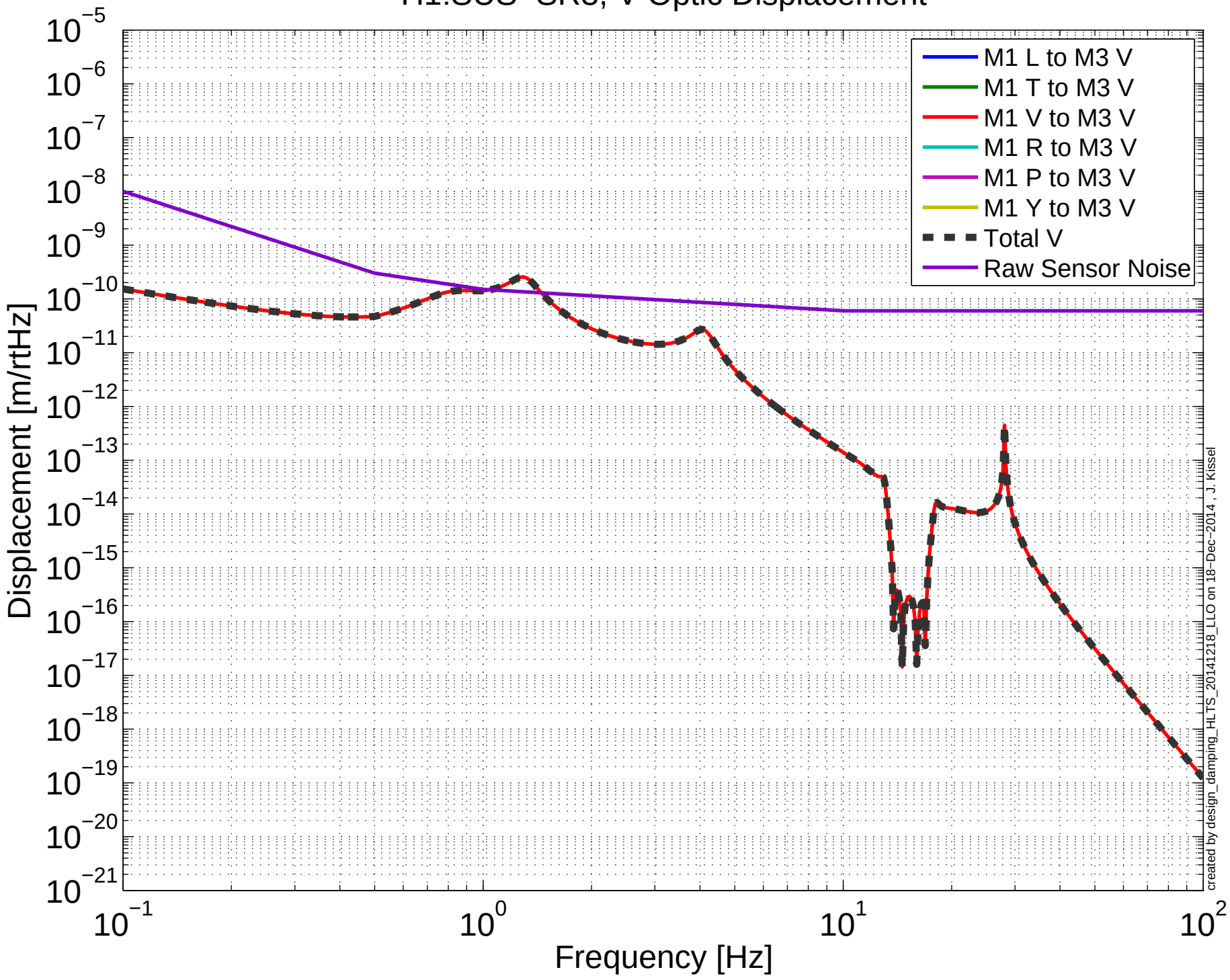

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, T Optic Displacement
M2 L to M3 T
M2 T to M3 T
M2 V to M3 T
M2 R to M3 T
M2 P to M3 T
M2 Y to M3 T
M2 Total T
Displacement [m/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

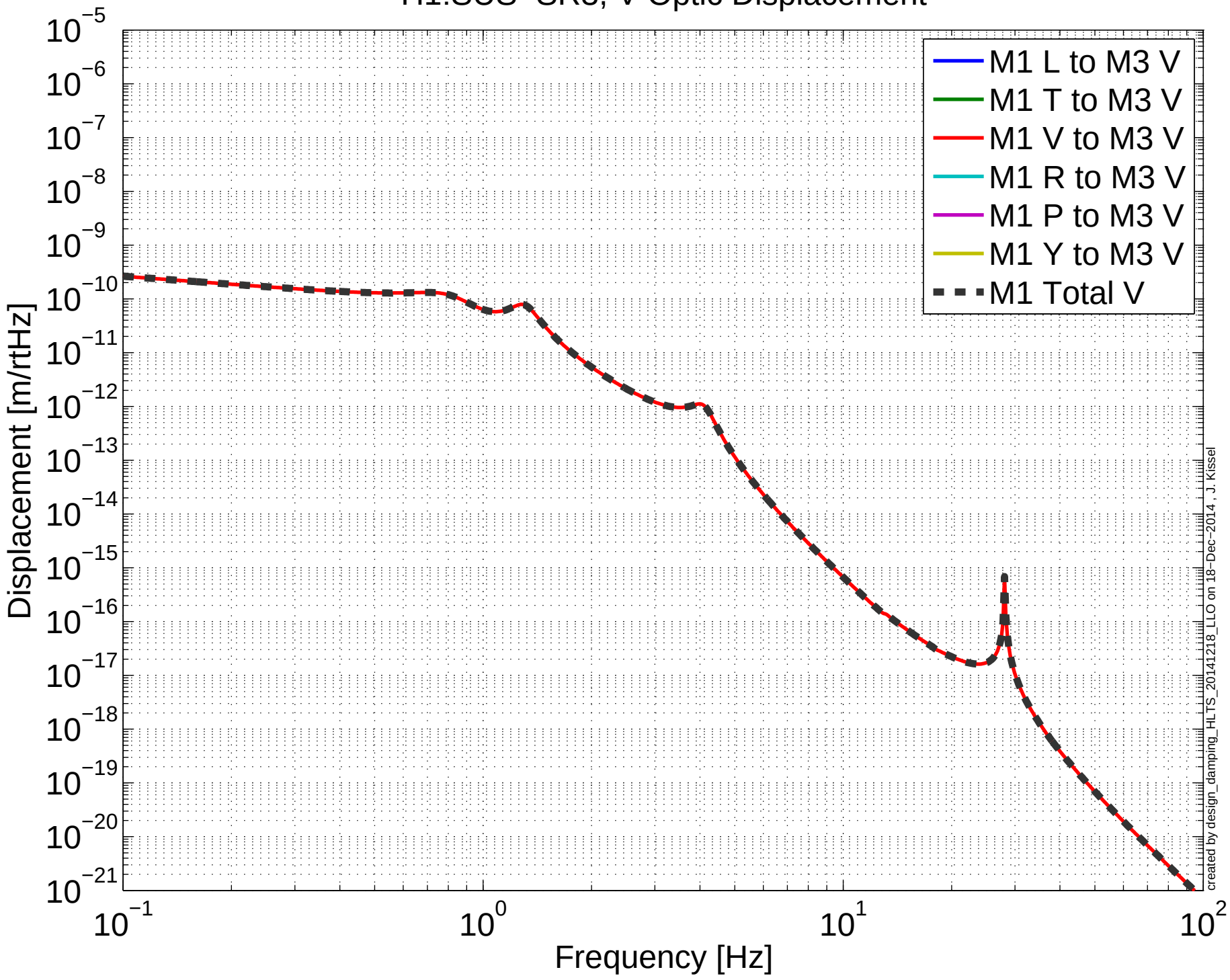

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, T Optic Displacement
M2 L to M3 T
M2 T to M3 T
M2 V to M3 T
M2 R to M3 T
M2 P to M3 T
M2 Y to M3 T
M2 Total T
Displacement [m/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

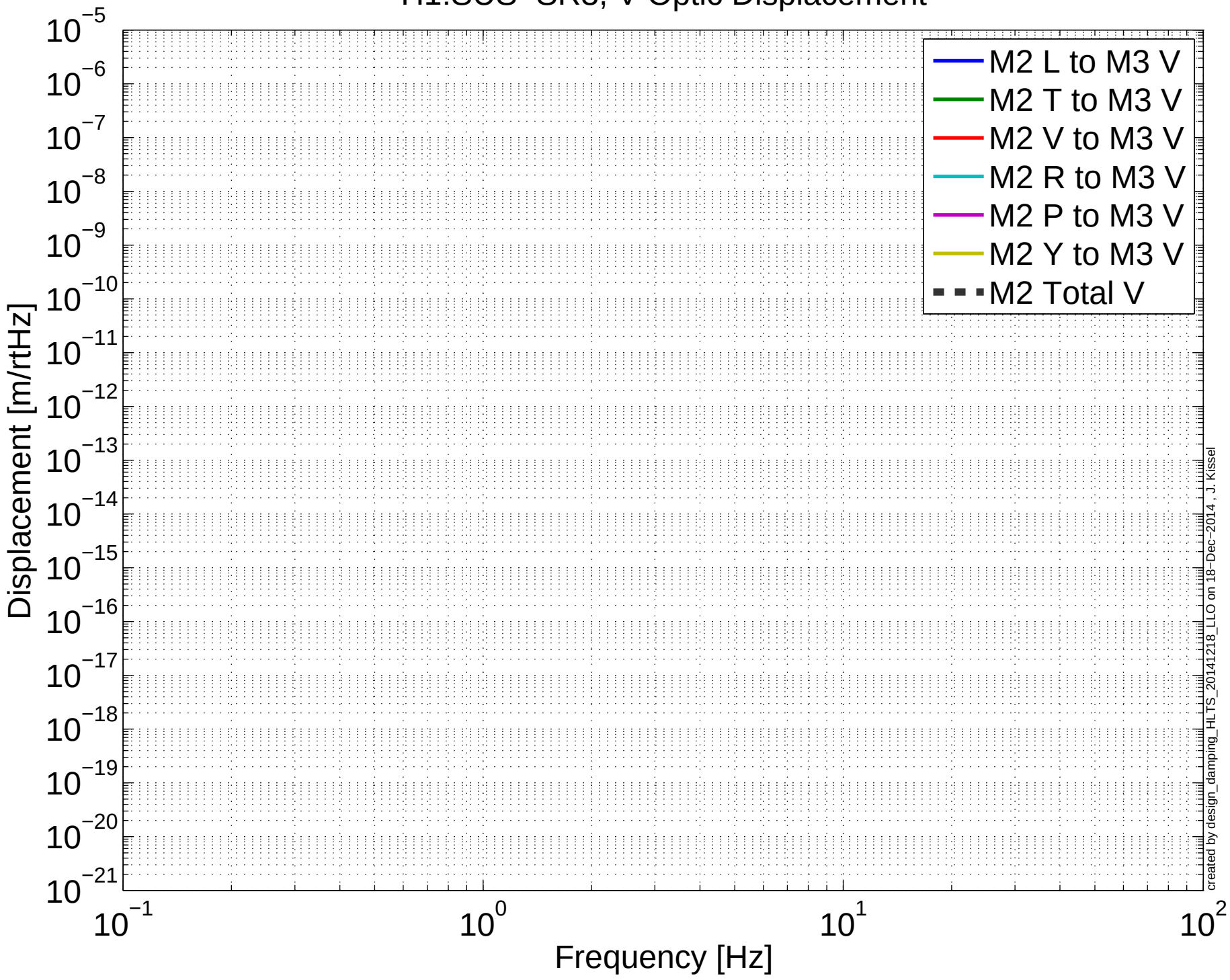

Damping Loop Performance
H1:SUS−SR3 T Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

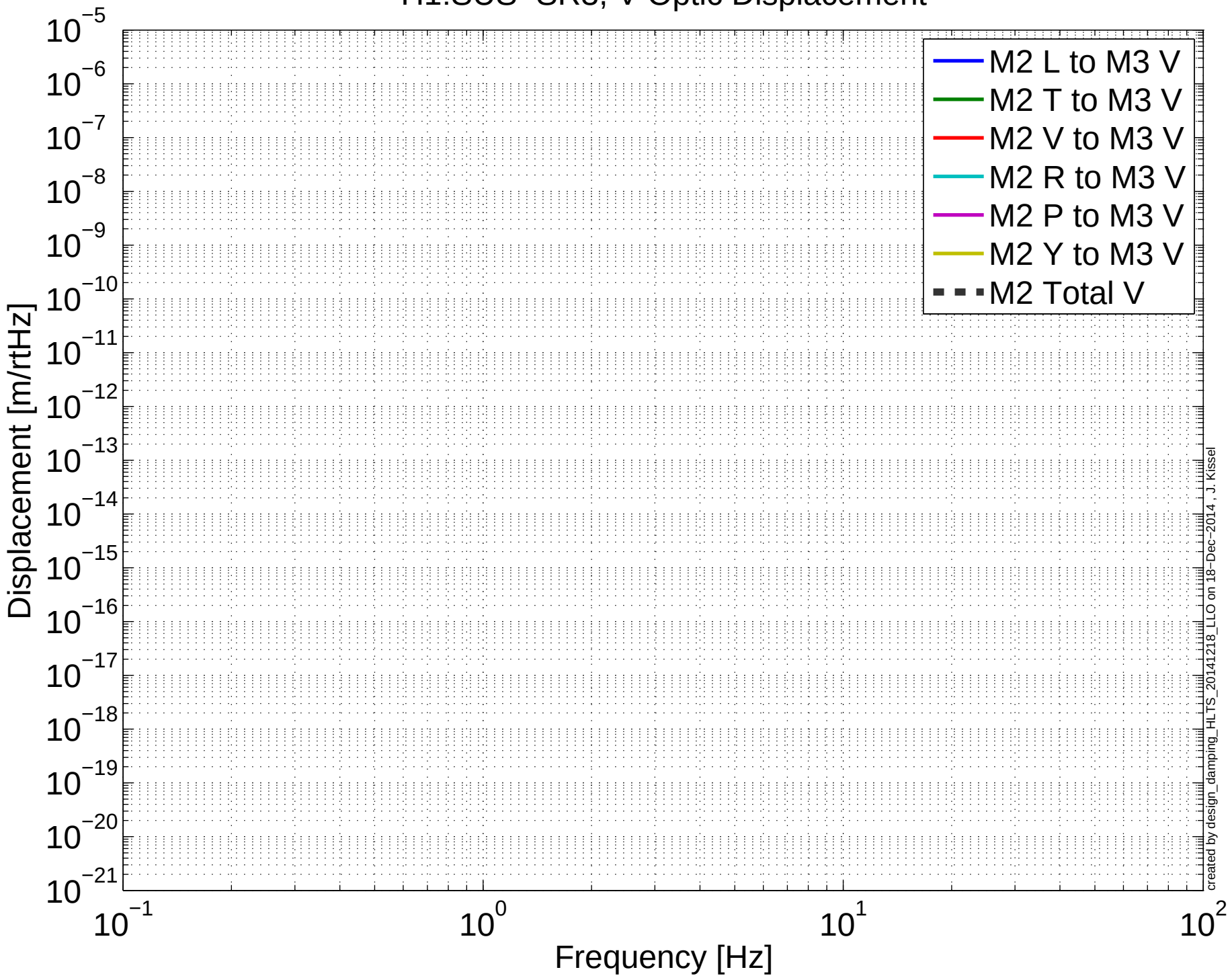

Damping Loop Design
H1:SUS−SR3 V
Magnitude
MIMO LUGF Phase Margins (red): [66.7 151] [deg]
MIMO UUGF Phase Margins (blue): [48 22.7] [deg]
Phase [deg]
Frequency [Hz]
Plant [m/N] / 1
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 1
MIMO Closed Loop / 1
Control [N/m] / 100
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

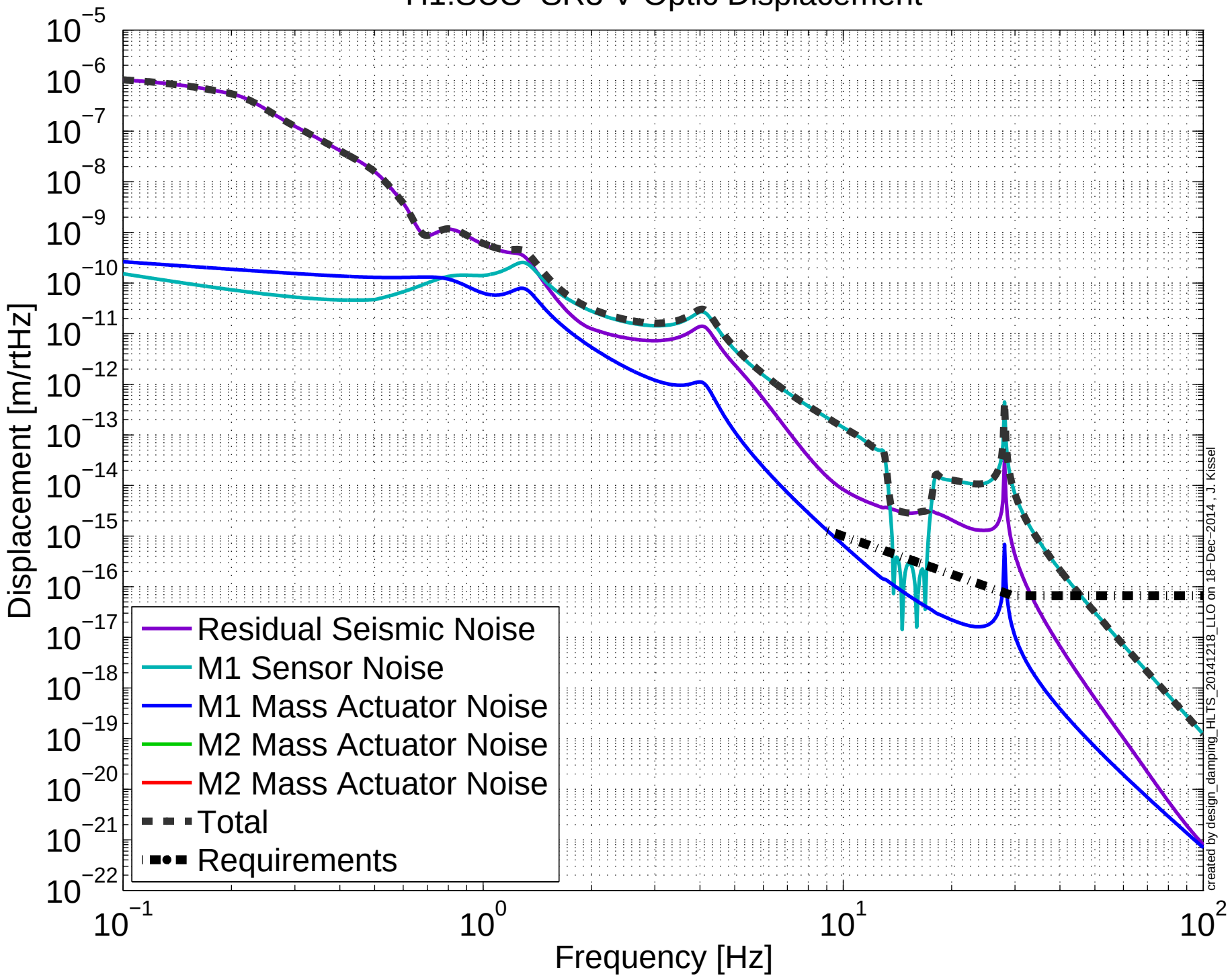

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, V Optic Displacement
Displacment [m/rtHz]
Frequency [Hz]
Sus. Point L to M3 V
Sus. Point T to M3 V
Sus. Point V to M3 V
Sus. Point R to M3 V
Sus. Point P to M3 V
Sus. Point Y to M3 V
Total V
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

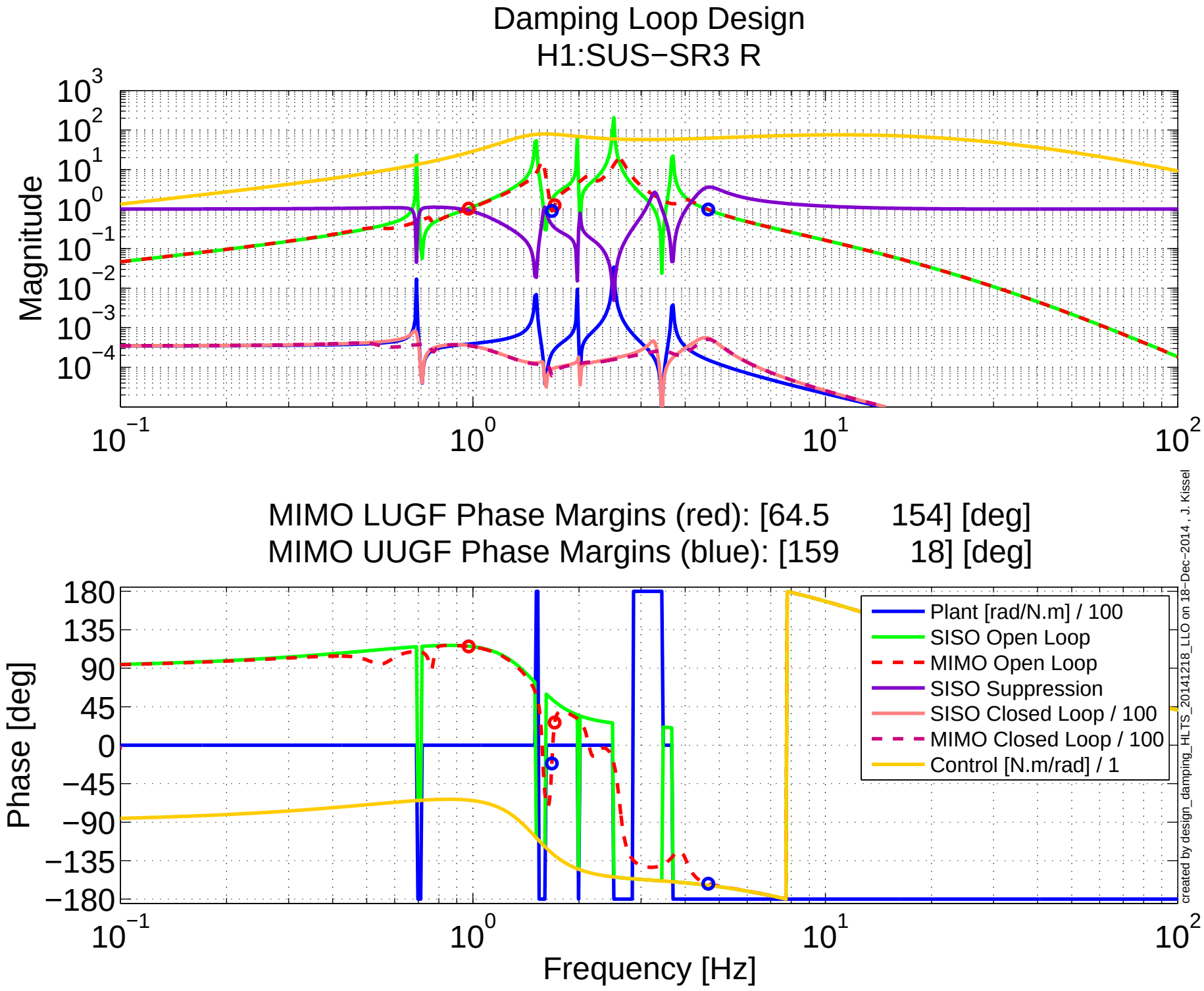

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, V Optic Displacement
M1 L to M3 V
M1 T to M3 V
M1 V to M3 V
M1 R to M3 V
M1 P to M3 V
M1 Y to M3 V
Total V
Raw Sensor Noise
Displacement [m/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

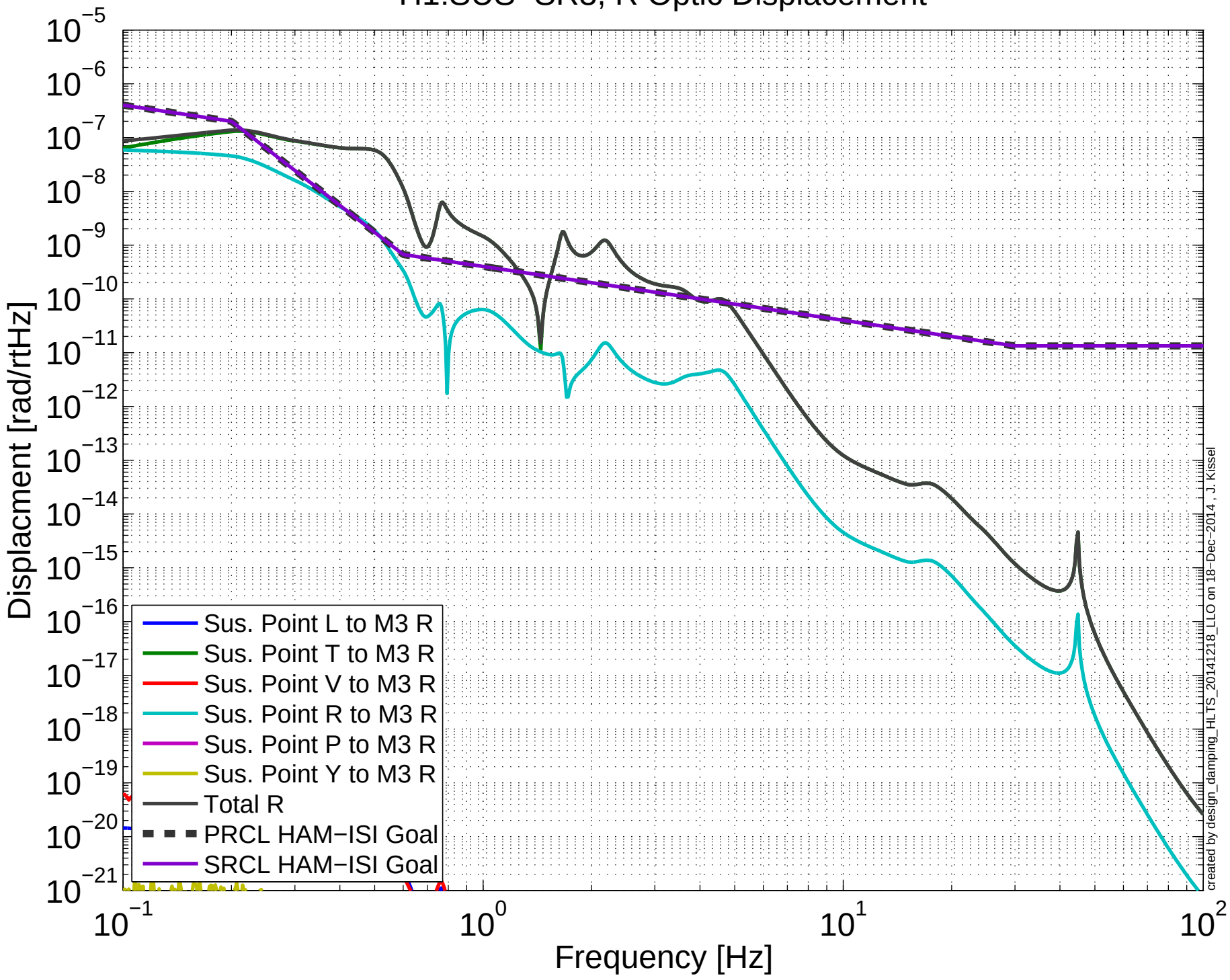

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, V Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M1 L to M3 V
M1 T to M3 V
M1 V to M3 V
M1 R to M3 V
M1 P to M3 V
M1 Y to M3 V
M1 Total V
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

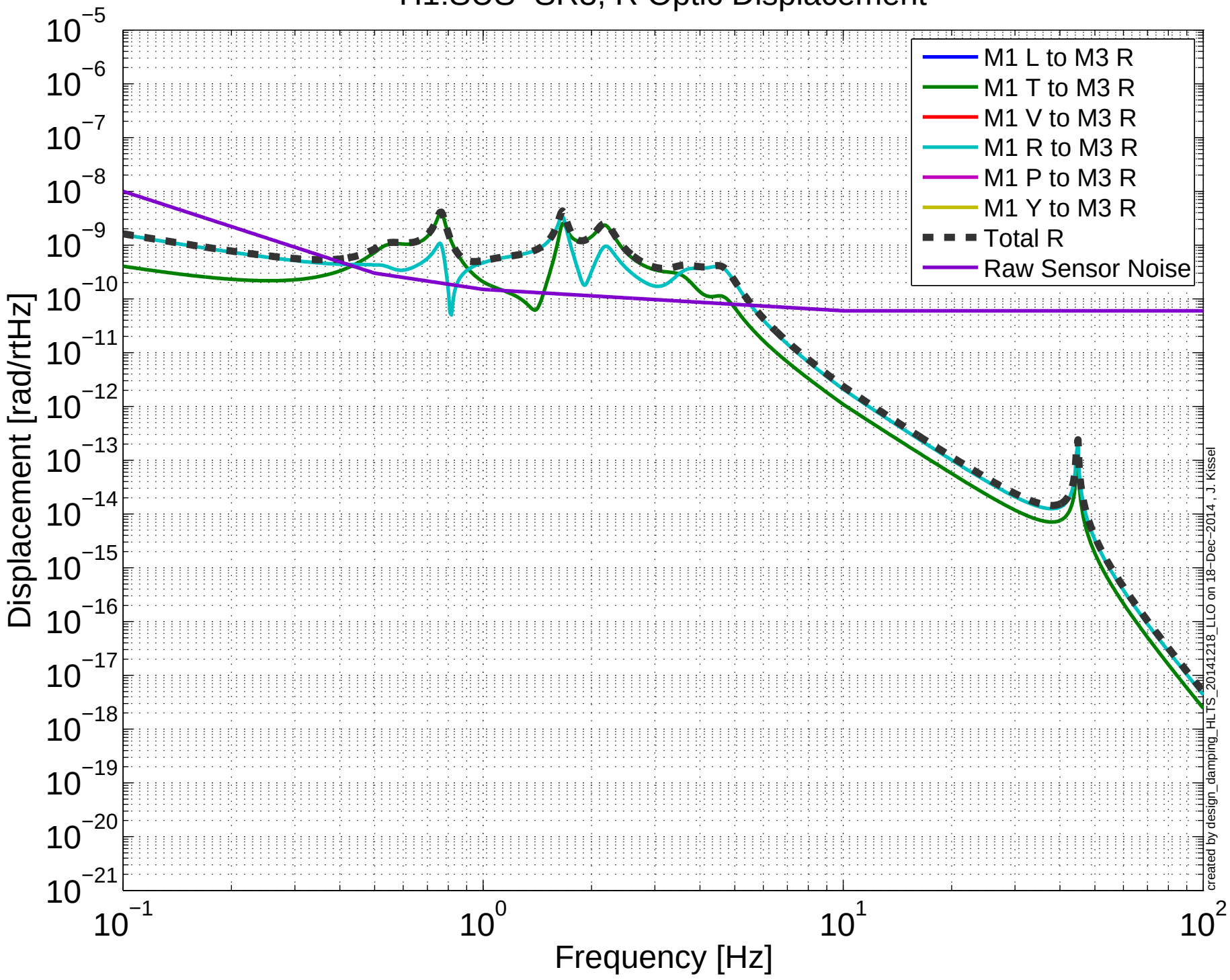

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, V Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M2 L to M3 V
M2 T to M3 V
M2 V to M3 V
M2 R to M3 V
M2 P to M3 V
M2 Y to M3 V
M2 Total V
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

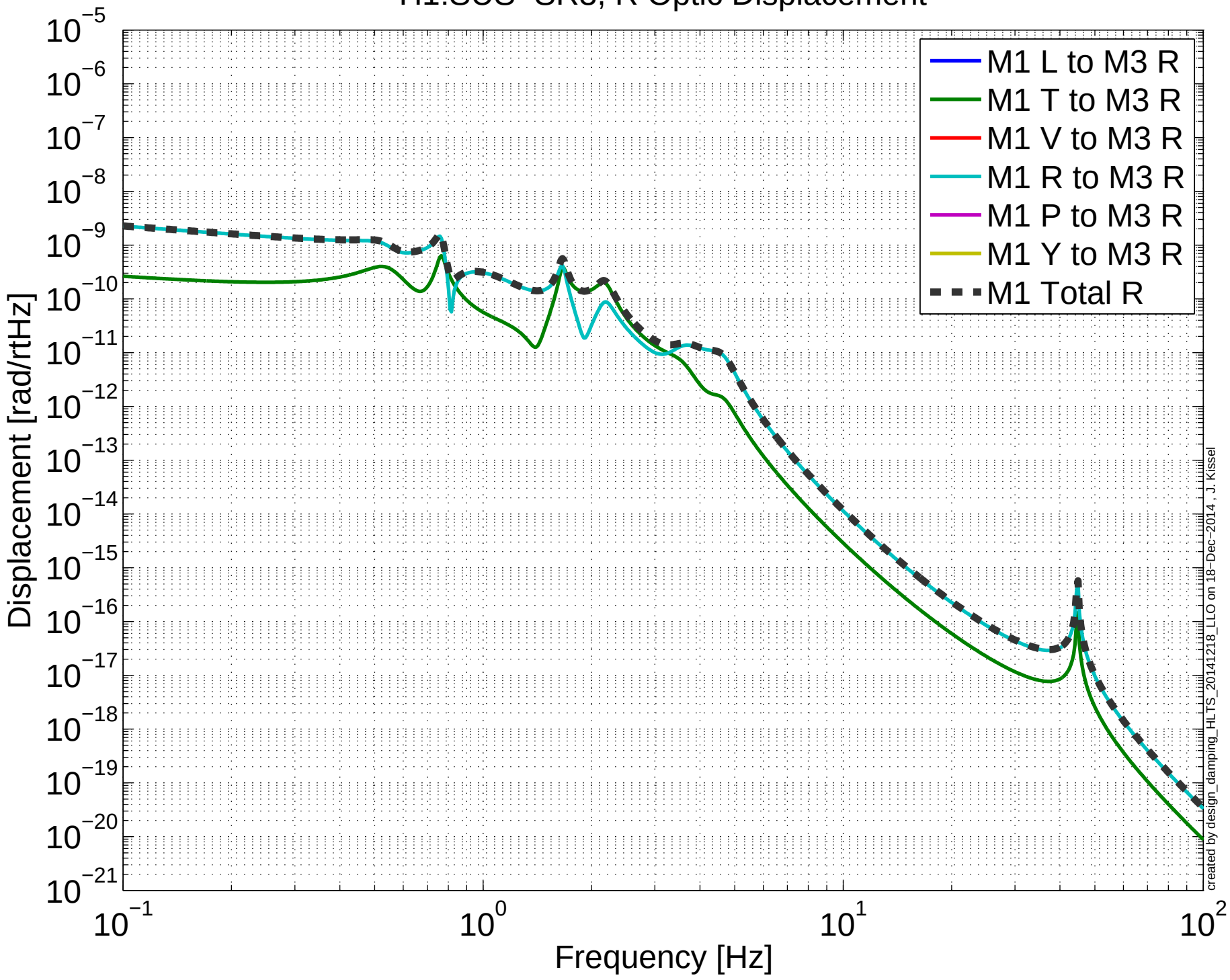

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, V Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
M2 L to M3 V
M2 T to M3 V
M2 V to M3 V
M2 R to M3 V
M2 P to M3 V
M2 Y to M3 V
M2 Total V
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

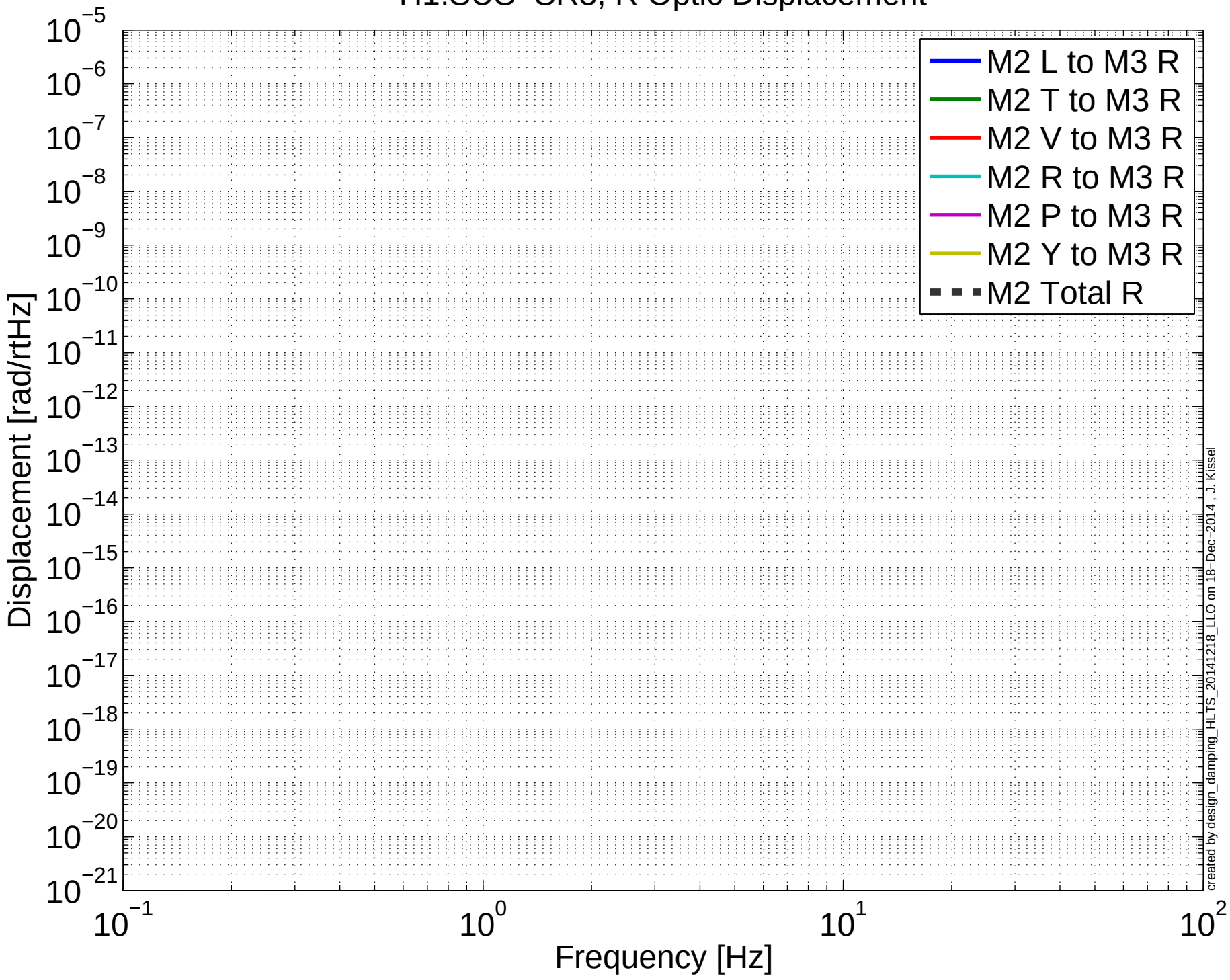

Damping Loop Performance
H1:SUS−SR3 V Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

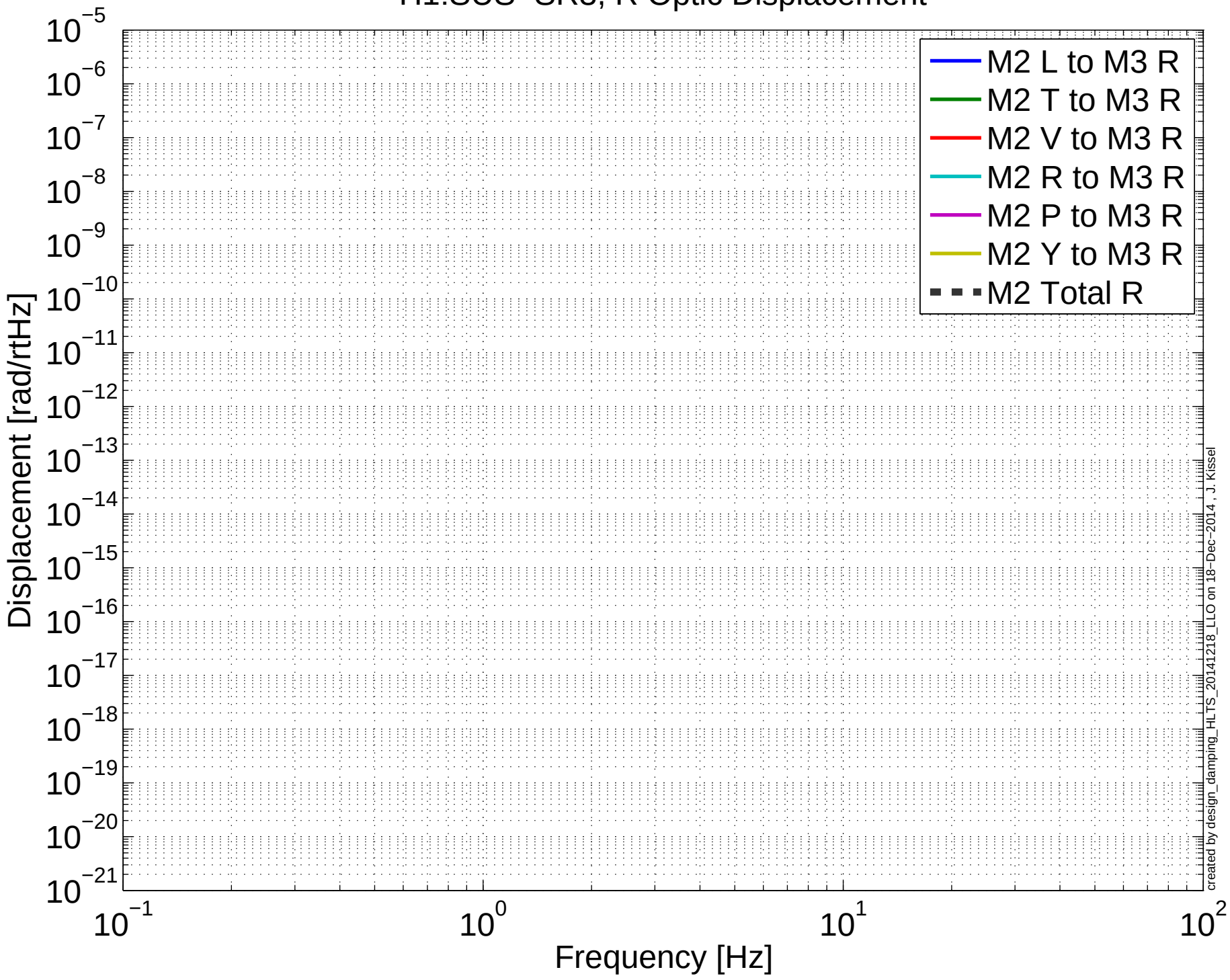

Damping Loop Design
H1:SUS−SR3 R
Magnitude
MIMO LUGF Phase Margins (red): [64.5 154] [deg]
MIMO UUGF Phase Margins (blue): [159 18] [deg]
Phase [deg]
Frequency [Hz]
Plant [rad/N.m] / 100
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 100
MIMO Closed Loop / 100
Control [N.m/rad] / 1
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

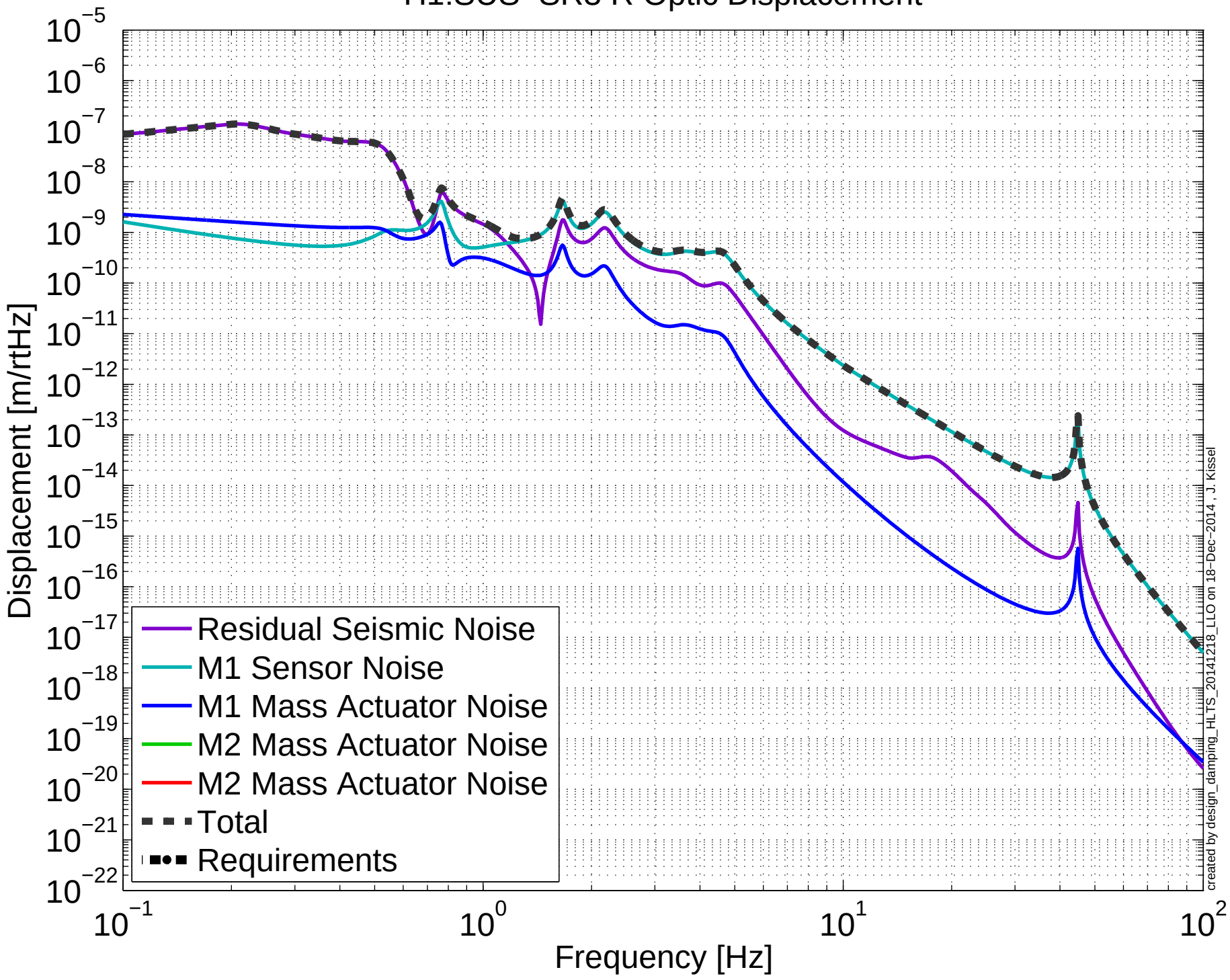

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, R Optic Displacement
Displacment [rad/rtHz]
Frequency [Hz]
Sus. Point L to M3 R
Sus. Point T to M3 R
Sus. Point V to M3 R
Sus. Point R to M3 R
Sus. Point P to M3 R
Sus. Point Y to M3 R
Total R
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

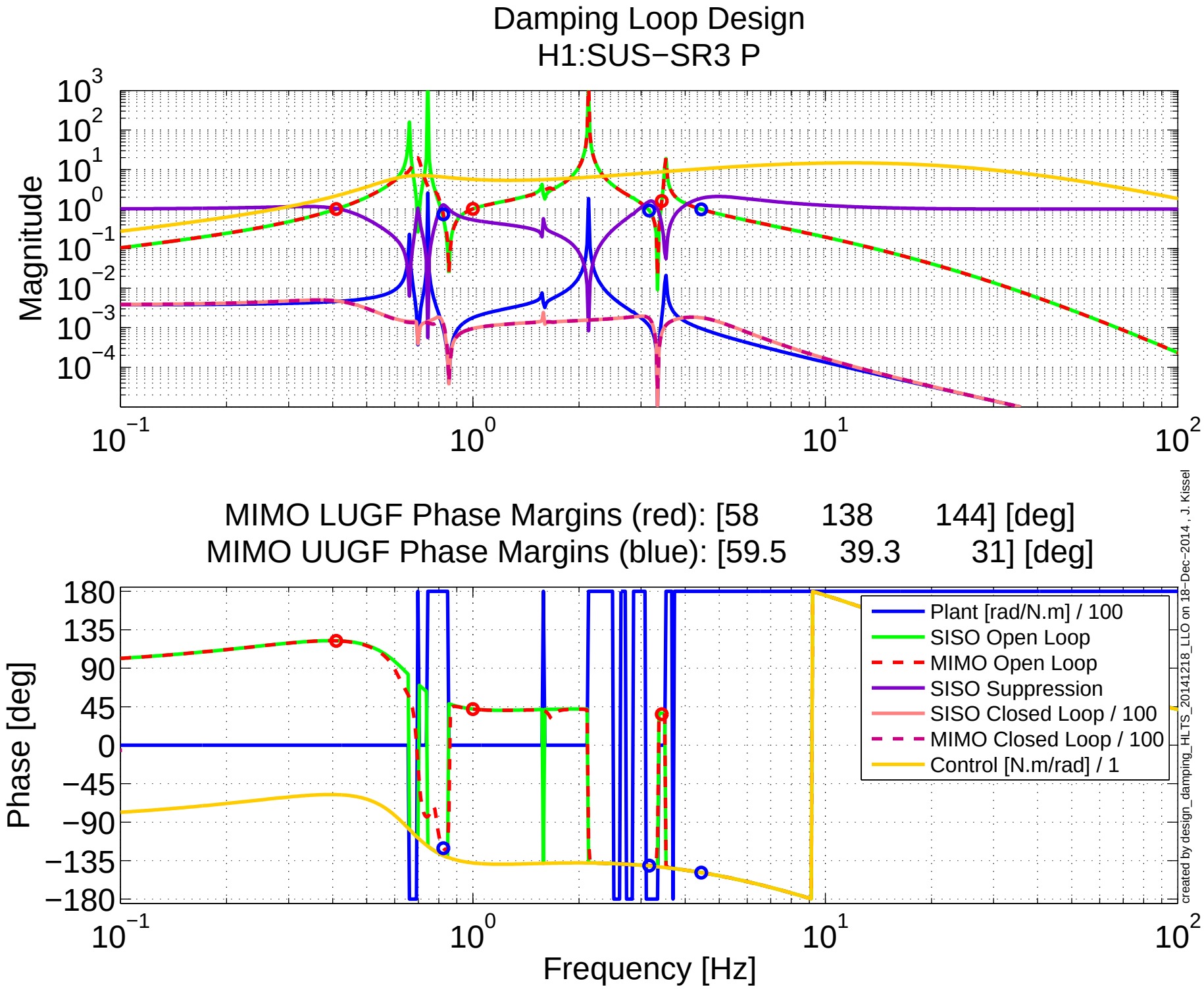

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, R Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M1 L to M3 R
M1 T to M3 R
M1 V to M3 R
M1 R to M3 R
M1 P to M3 R
M1 Y to M3 R
Total R
Raw Sensor Noise
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

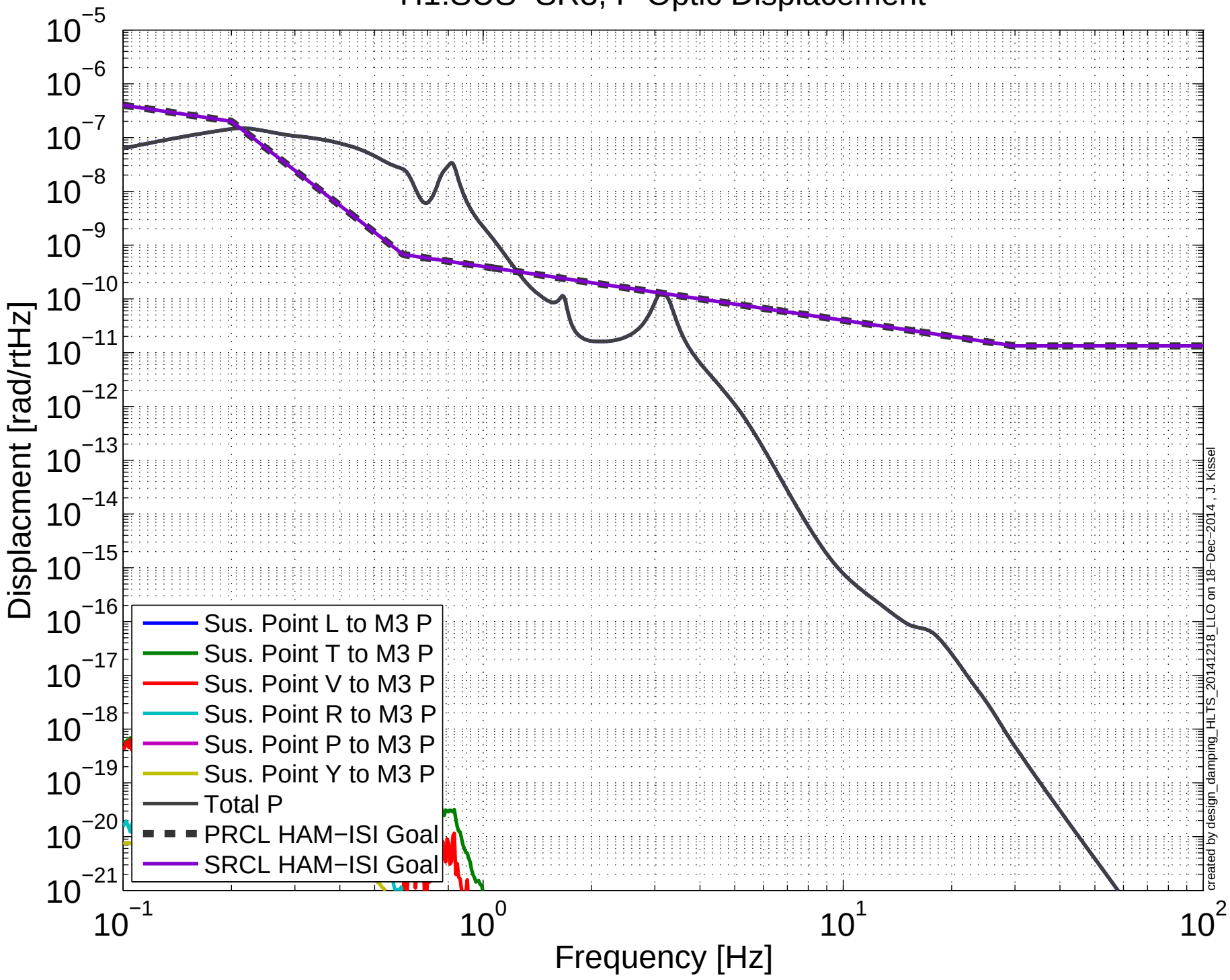

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, R Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M1 L to M3 R
M1 T to M3 R
M1 V to M3 R
M1 R to M3 R
M1 P to M3 R
M1 Y to M3 R
M1 Total R
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

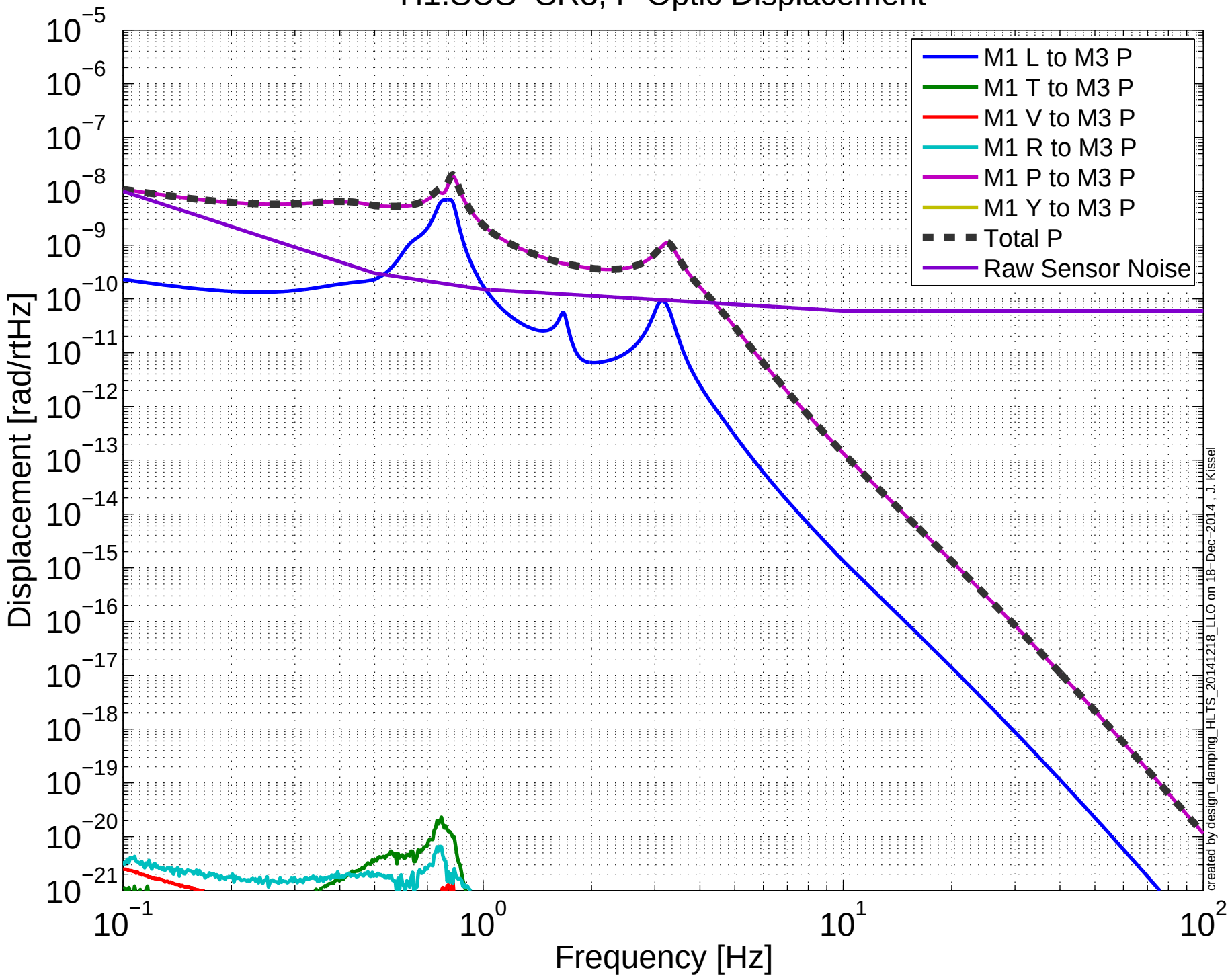

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, R Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M2 L to M3 R
M2 T to M3 R
M2 V to M3 R
M2 R to M3 R
M2 P to M3 R
M2 Y to M3 R
M2 Total R
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

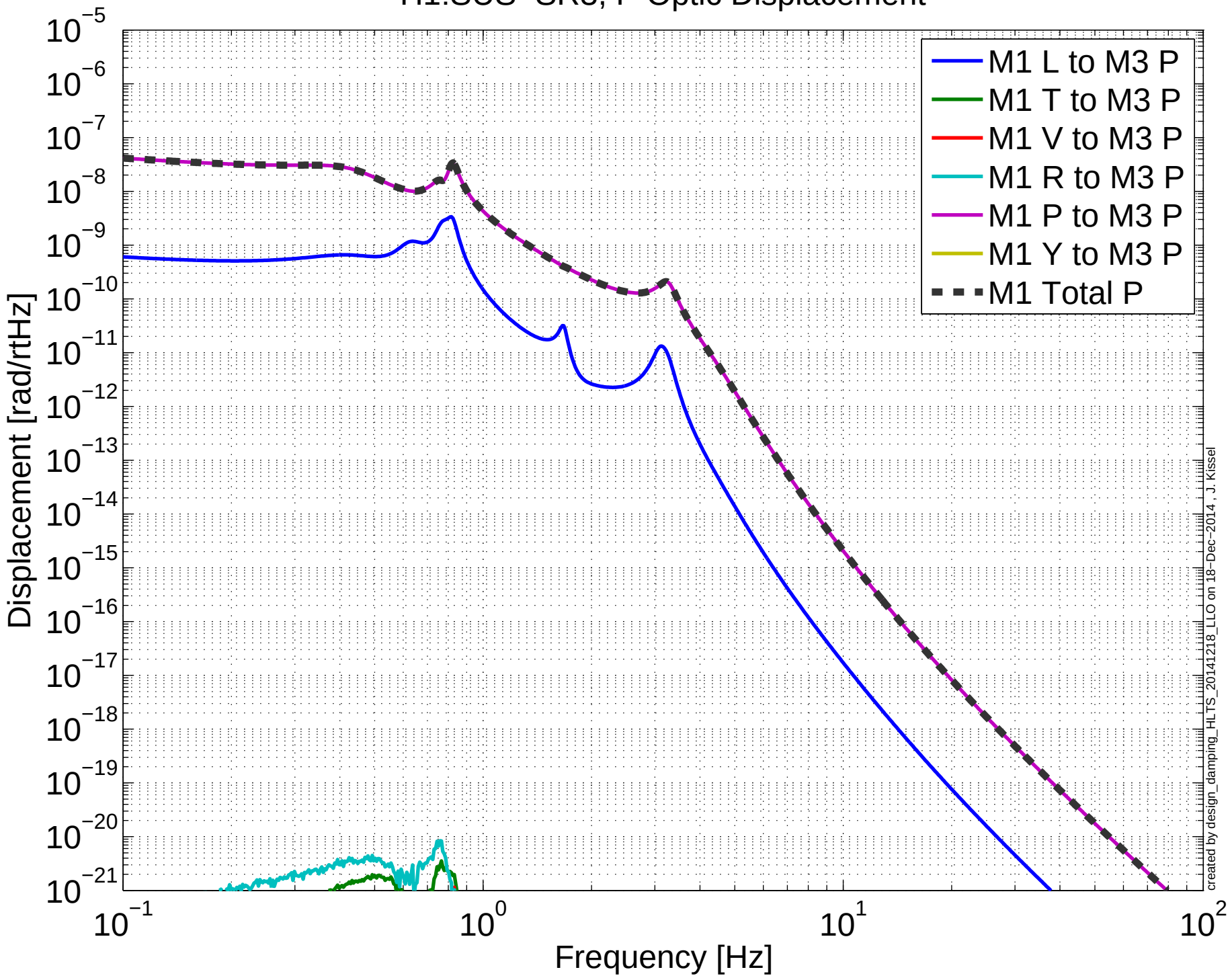

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, R Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M2 L to M3 R
M2 T to M3 R
M2 V to M3 R
M2 R to M3 R
M2 P to M3 R
M2 Y to M3 R
M2 Total R
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

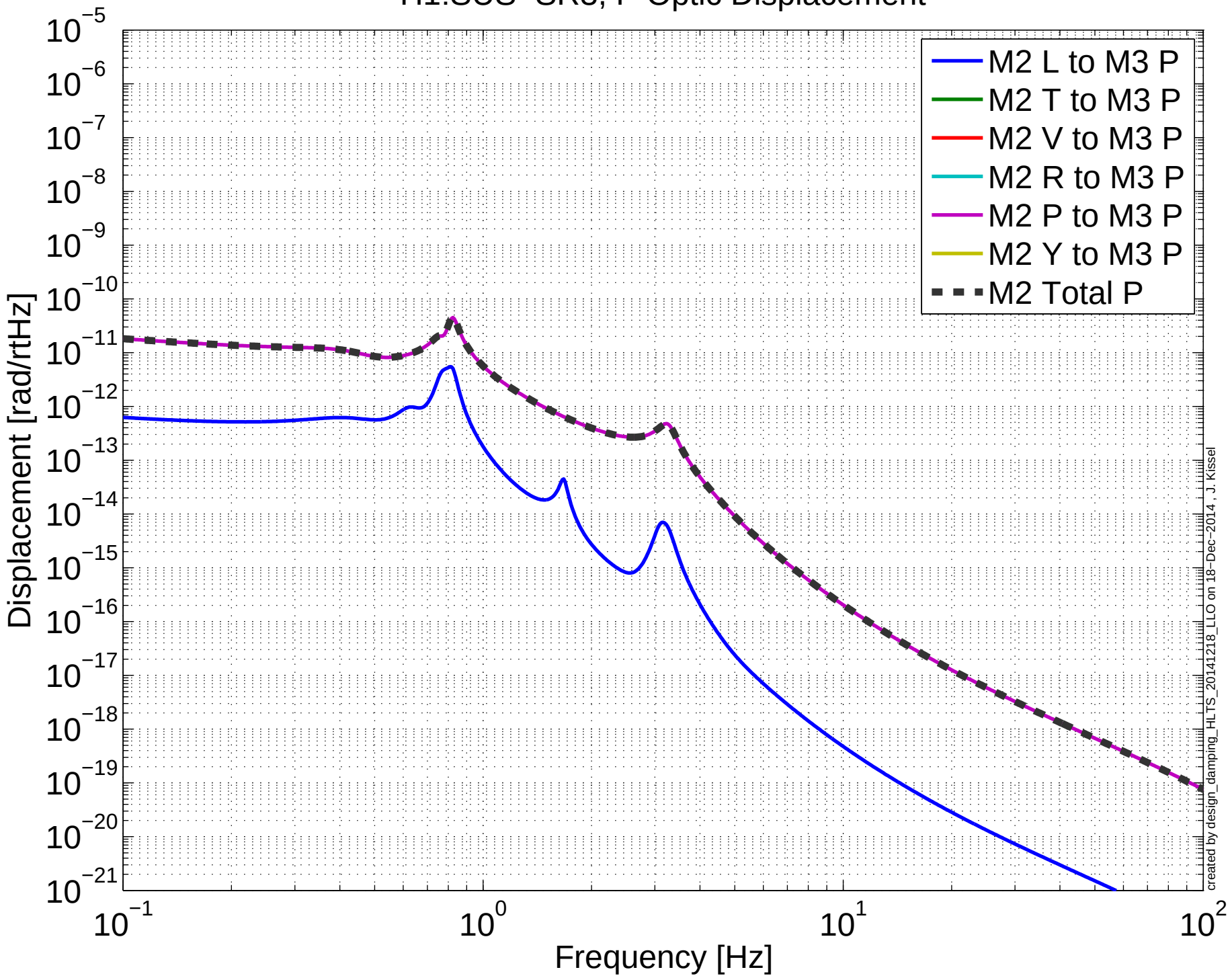

Damping Loop Performance
H1:SUS−SR3 R Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

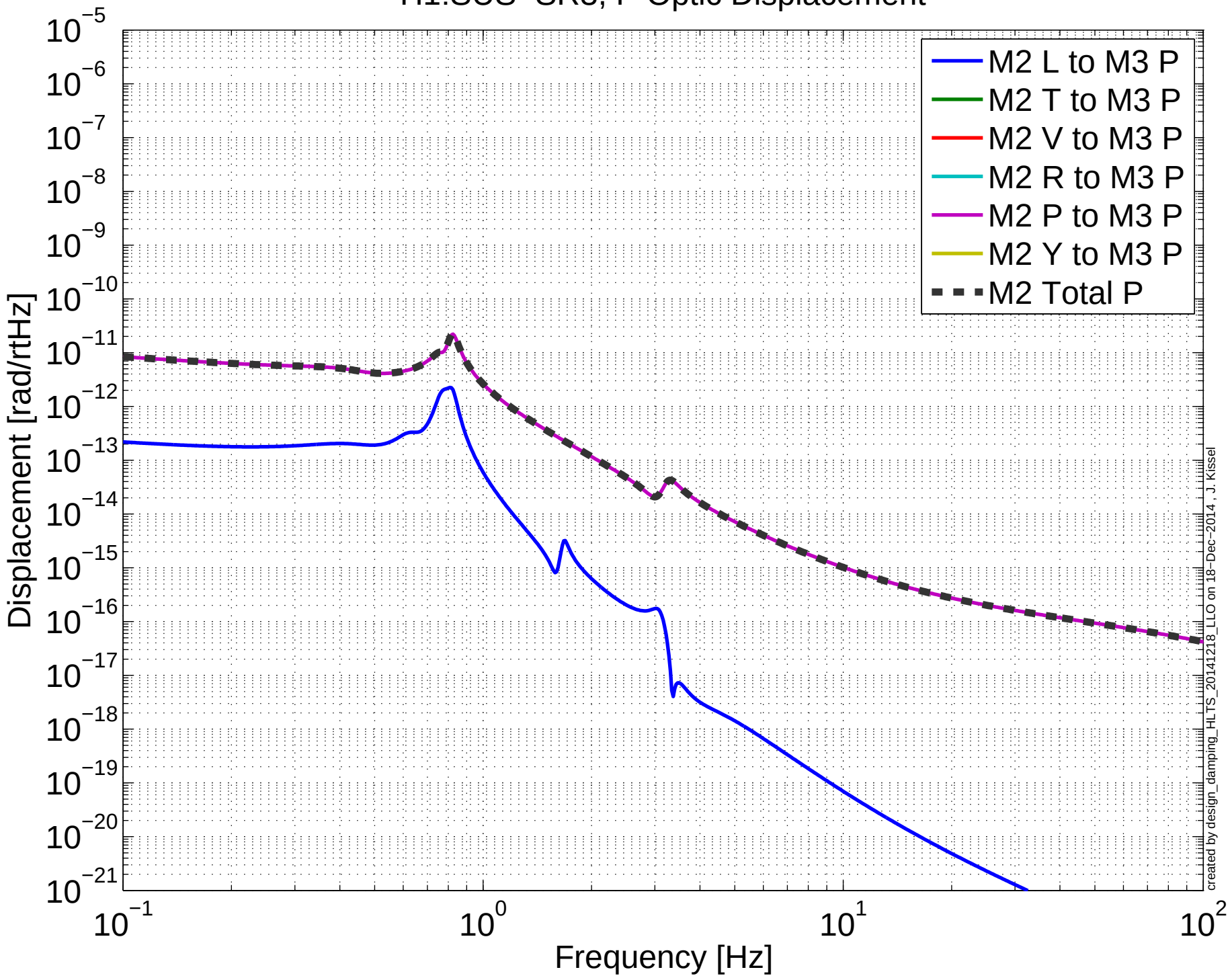

Damping Loop Design
H1:SUS−SR3 P
Magnitude
MIMO LUGF Phase Margins (red): [58 138 144] [deg]
MIMO UUGF Phase Margins (blue): [59.5 39.3 31] [deg]
Phase [deg]
Frequency [Hz]
Plant [rad/N.m] / 100
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 100
MIMO Closed Loop / 100
Control [N.m/rad] / 1
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

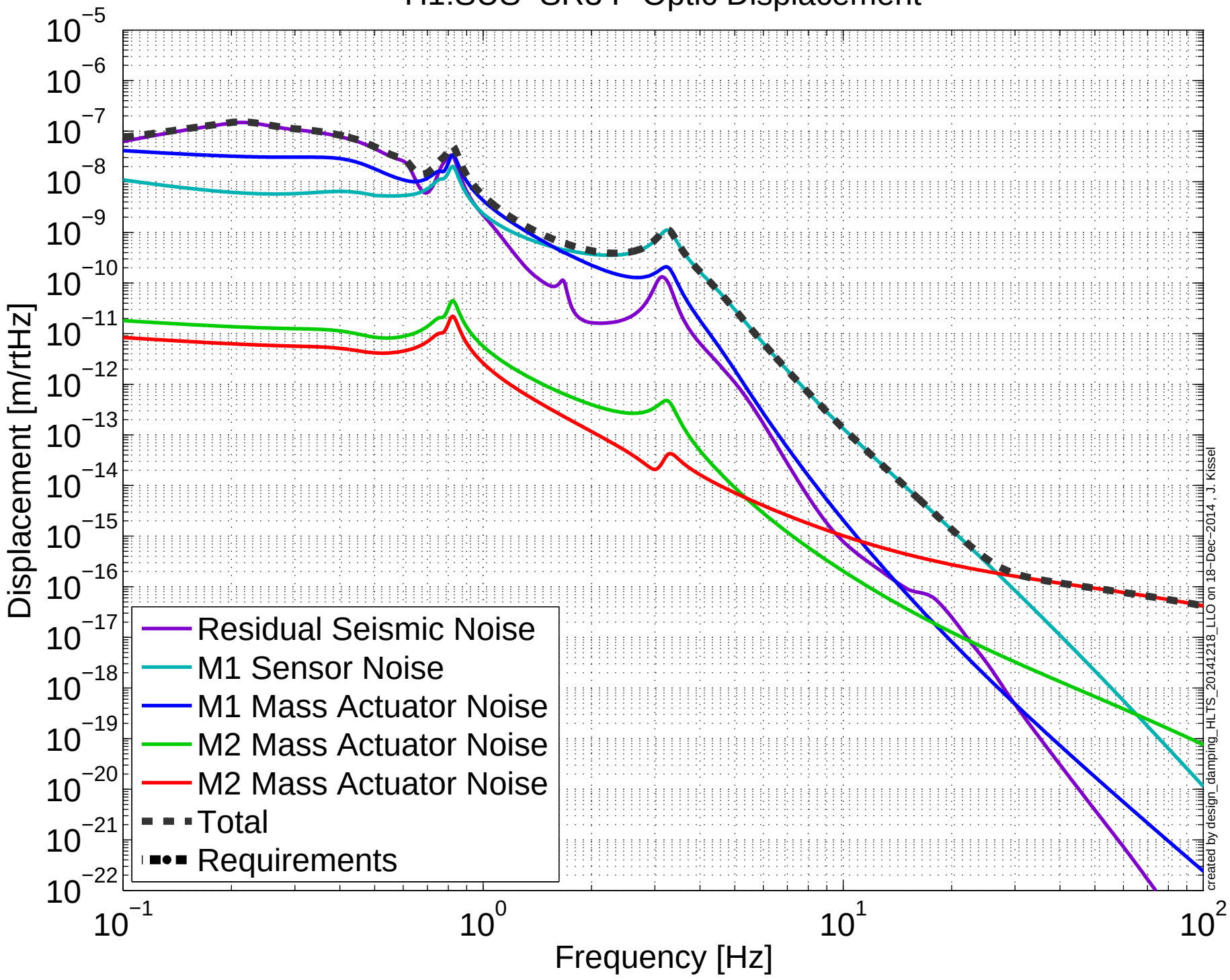

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, P Optic Displacement
Displacment [rad/rtHz]
Frequency [Hz]
Sus. Point L to M3 P
Sus. Point T to M3 P
Sus. Point V to M3 P
Sus. Point R to M3 P
Sus. Point P to M3 P
Sus. Point Y to M3 P
Total P
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

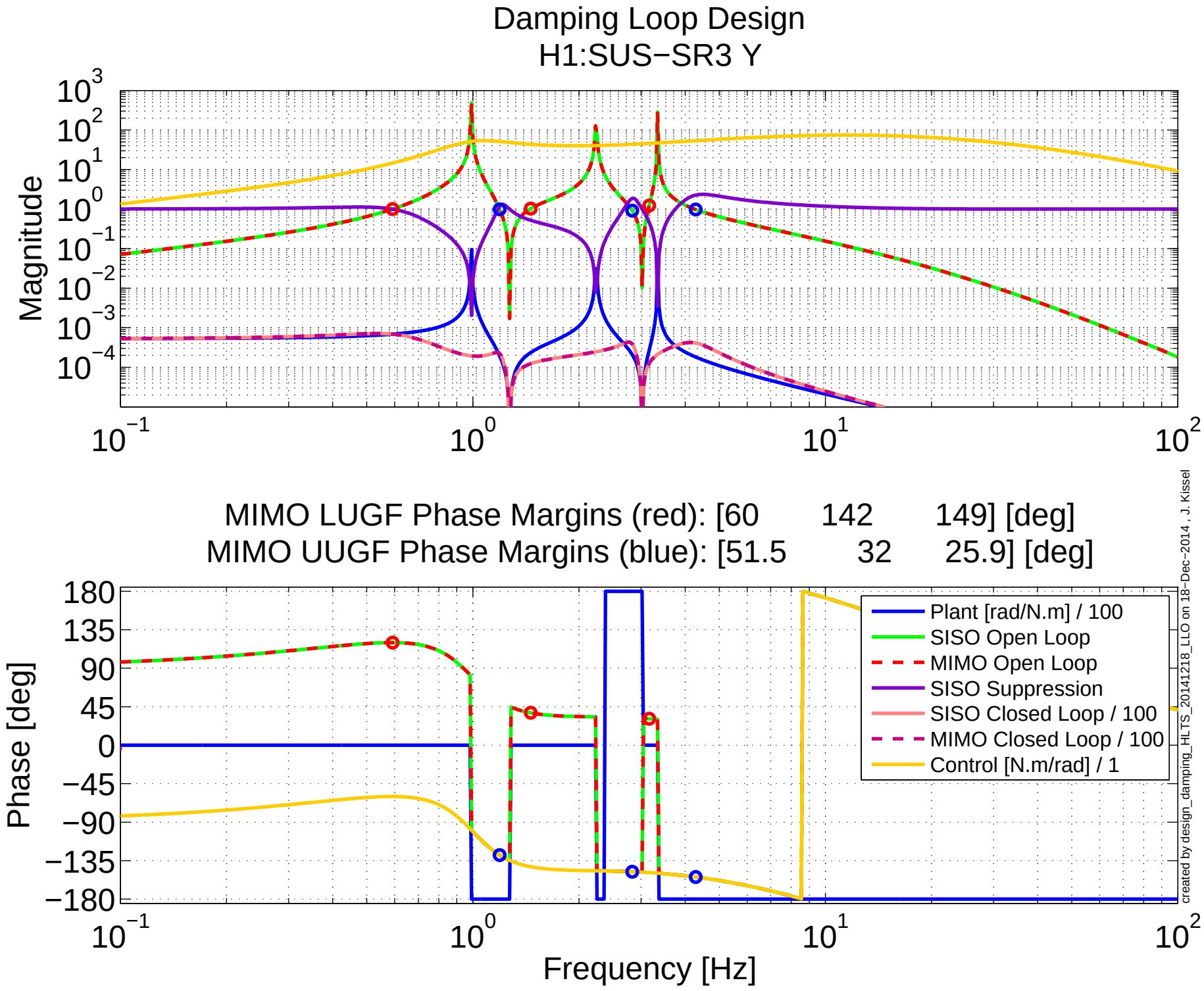

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, P Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M1 L to M3 P
M1 T to M3 P
M1 V to M3 P
M1 R to M3 P
M1 P to M3 P
M1 Y to M3 P
Total P
Raw Sensor Noise
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

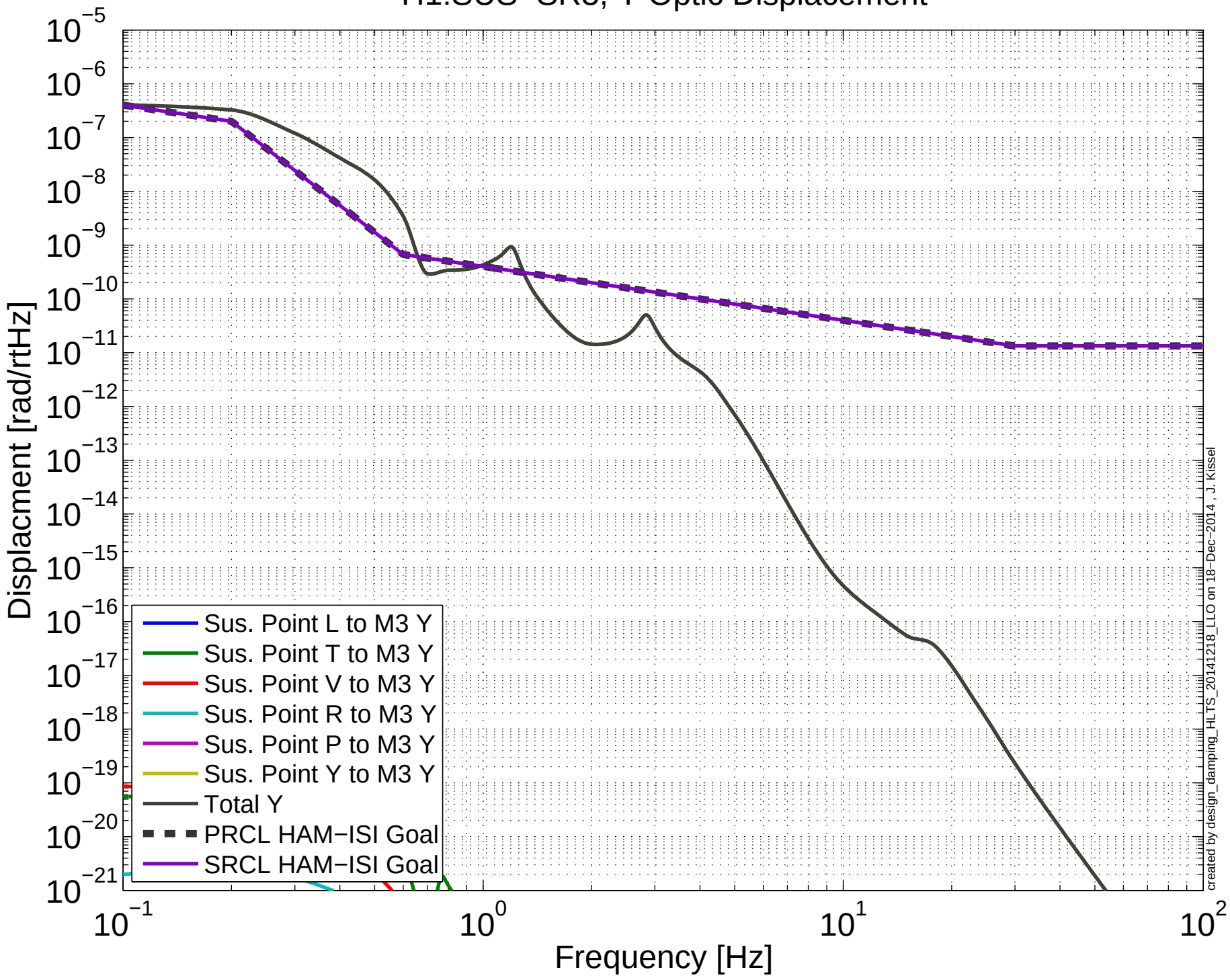

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, P Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M1 L to M3 P
M1 T to M3 P
M1 V to M3 P
M1 R to M3 P
M1 P to M3 P
M1 Y to M3 P
M1 Total P
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

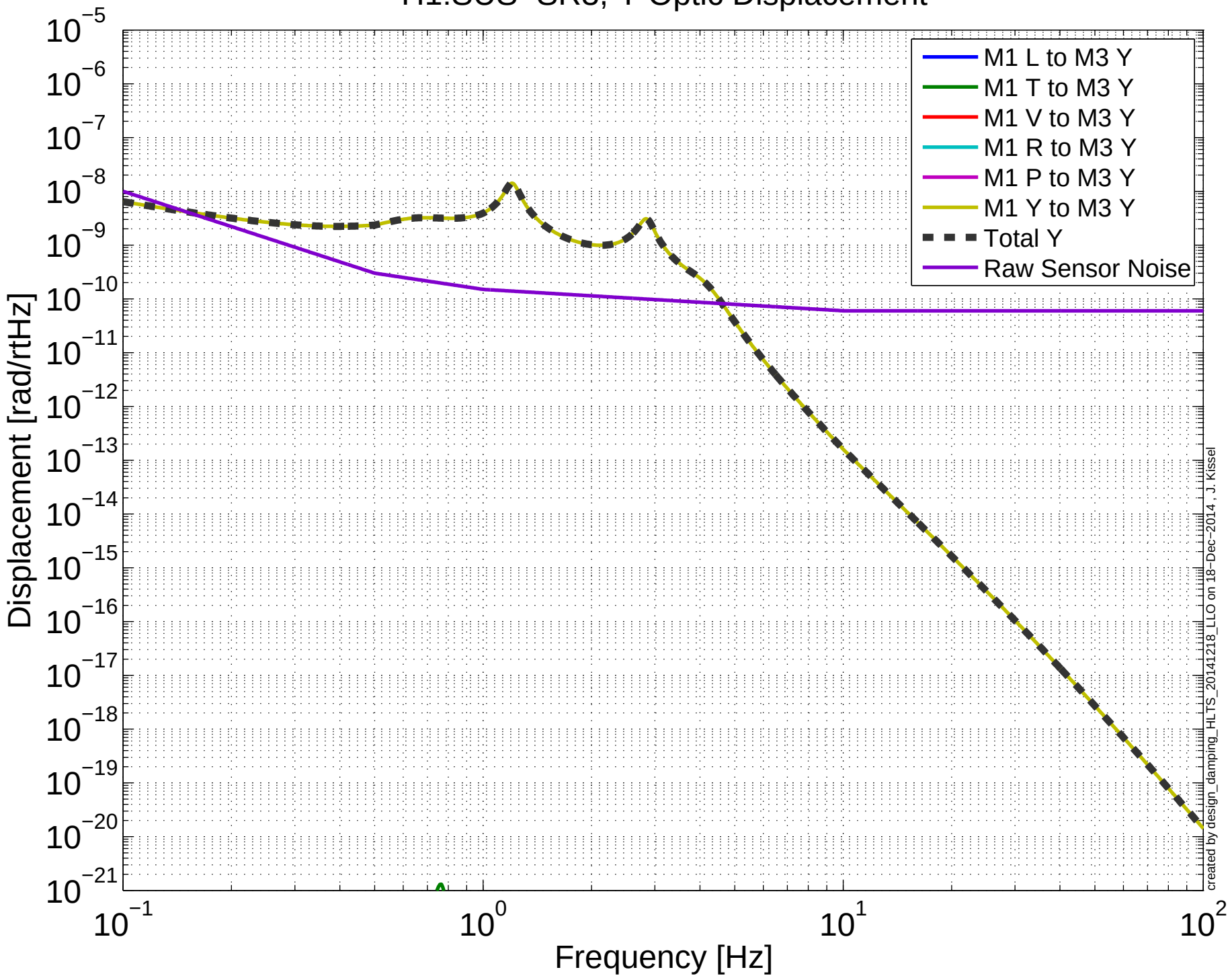

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, P Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M2 L to M3 P
M2 T to M3 P
M2 V to M3 P
M2 R to M3 P
M2 P to M3 P
M2 Y to M3 P
M2 Total P
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

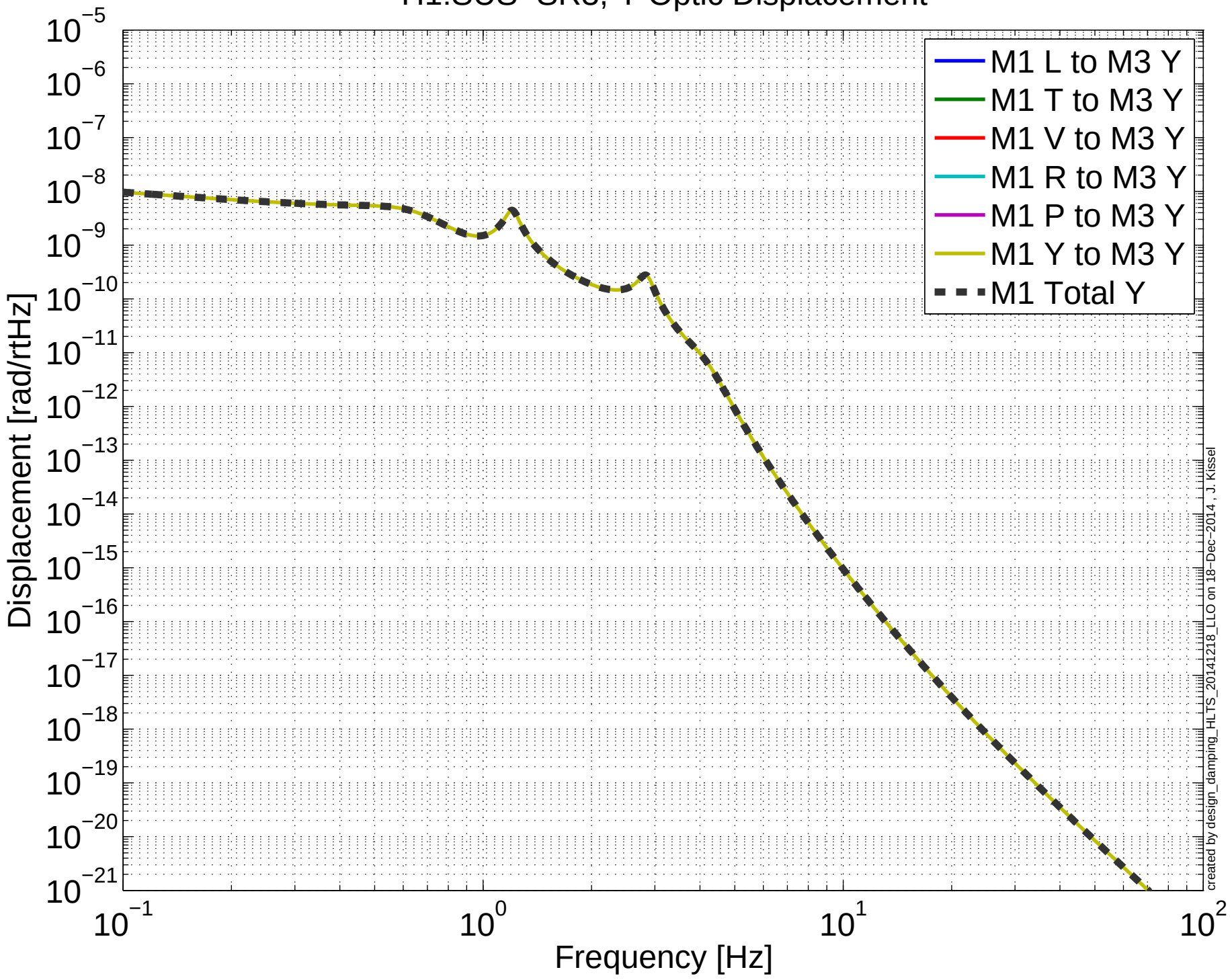

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, P Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M2 L to M3 P
M2 T to M3 P
M2 V to M3 P
M2 R to M3 P
M2 P to M3 P
M2 Y to M3 P
M2 Total P
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

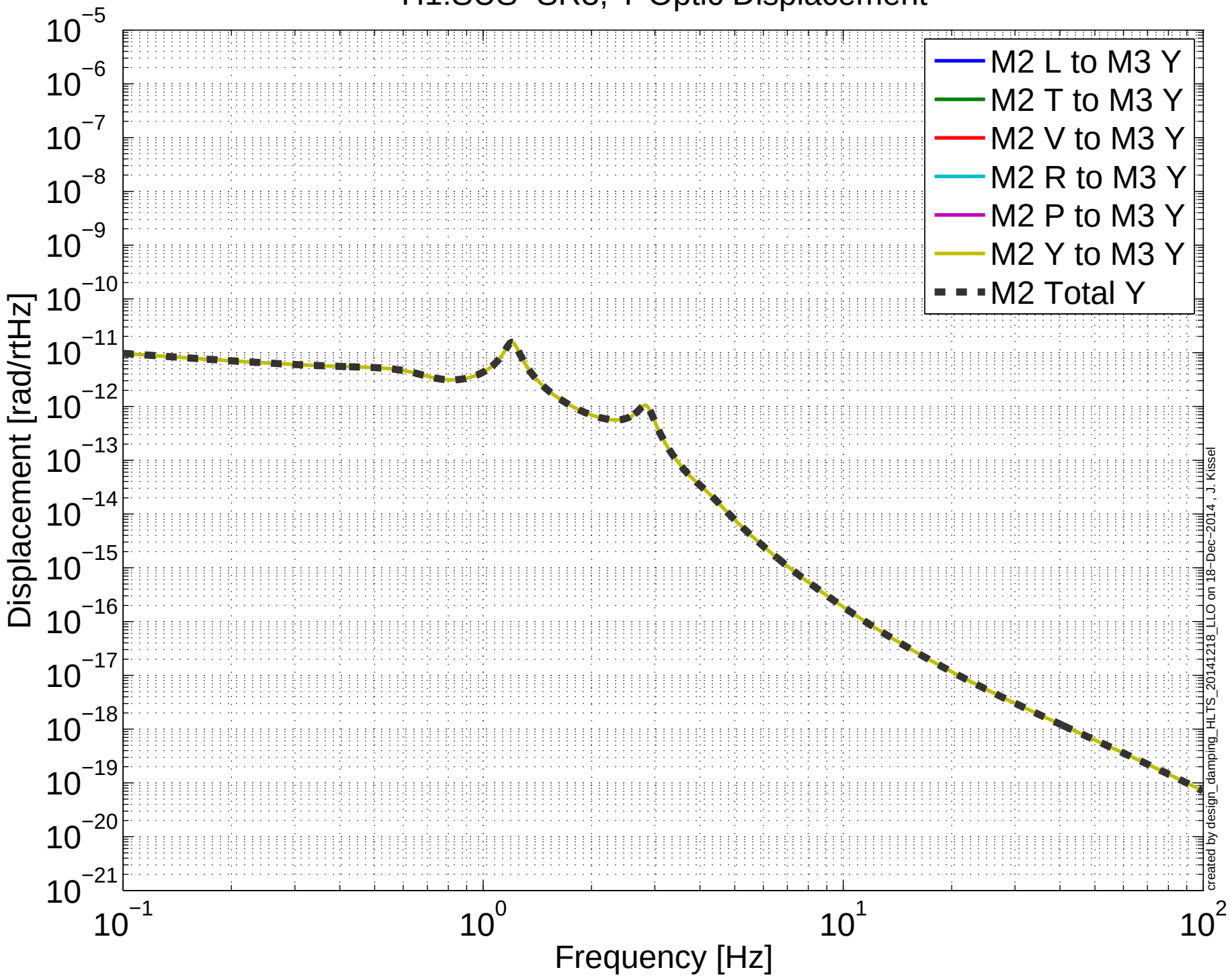

Damping Loop Performance
H1:SUS−SR3 P Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

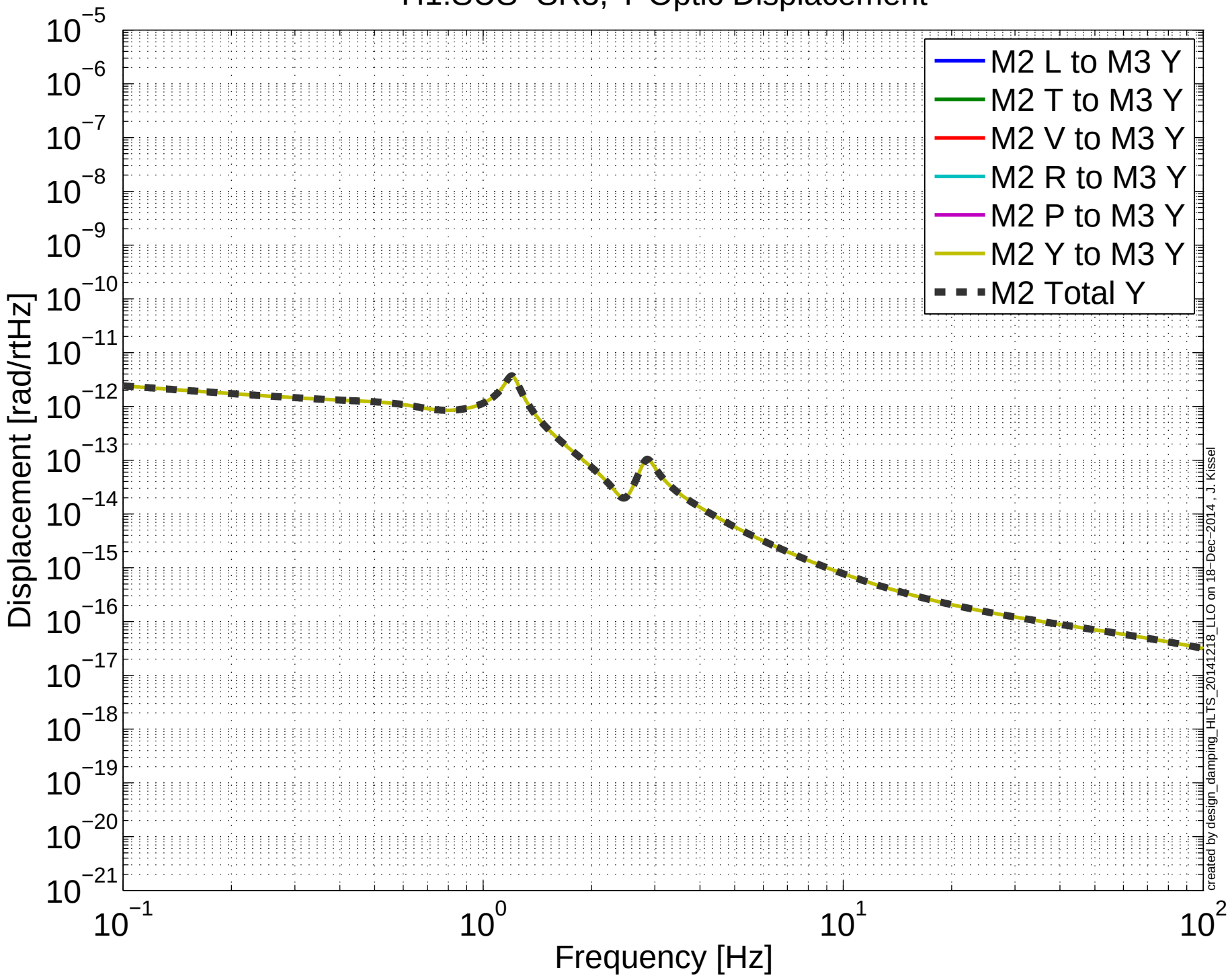

Damping Loop Design
H1:SUS−SR3 Y
Magnitude
MIMO LUGF Phase Margins (red): [60 142 149] [deg]
MIMO UUGF Phase Margins (blue): [51.5 32 25.9] [deg]
Phase [deg]
Frequency [Hz]
Plant [rad/N.m] / 100
SISO Open Loop
MIMO Open Loop
SISO Suppression
SISO Closed Loop / 100
MIMO Closed Loop / 100
Control [N.m/rad] / 1
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

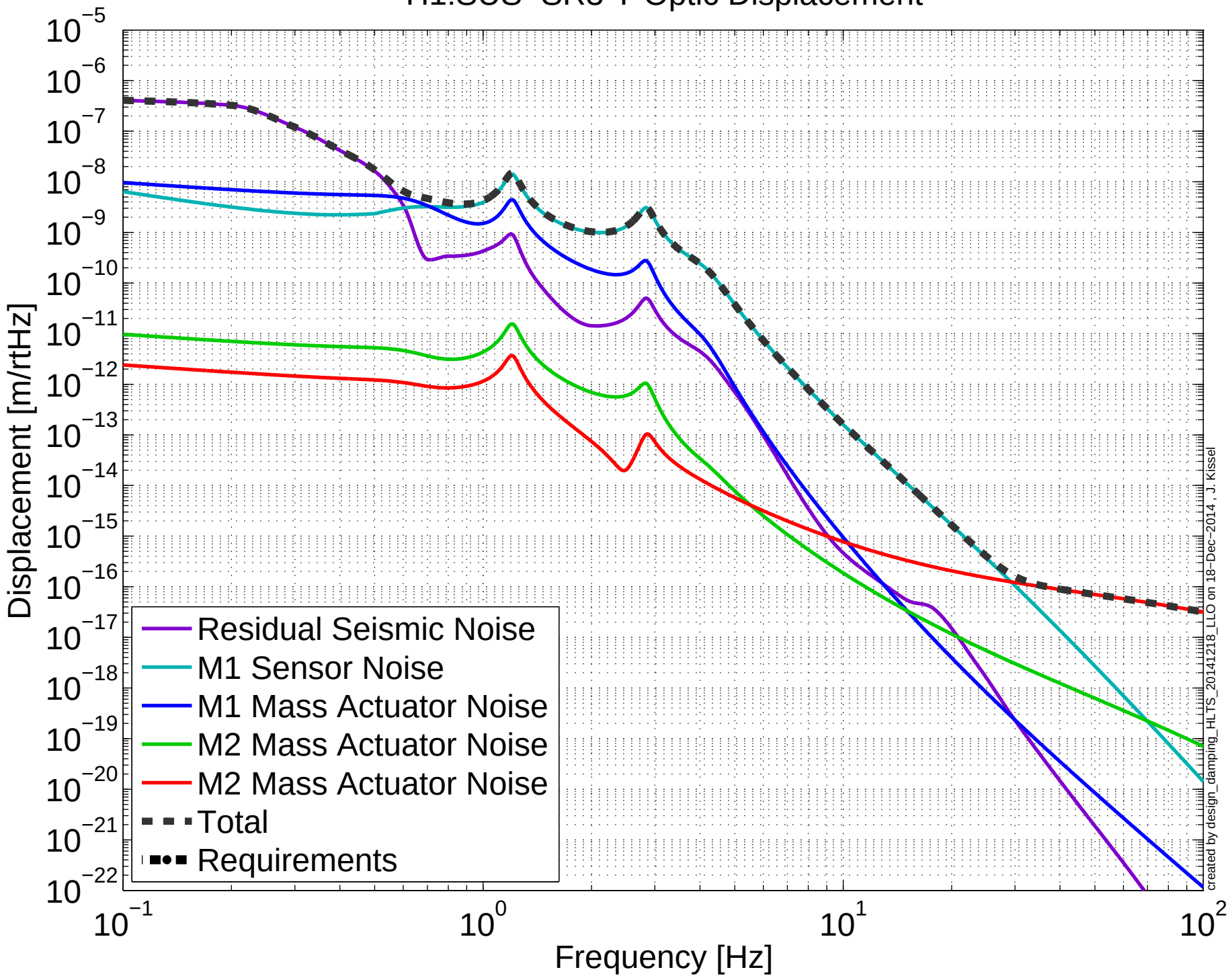

Projected Sus. Point > Optic Seismic Noise Budget
H1:SUS−SR3, Y Optic Displacement
Displacment [rad/rtHz]
Frequency [Hz]
Sus. Point L to M3 Y
Sus. Point T to M3 Y
Sus. Point V to M3 Y
Sus. Point R to M3 Y
Sus. Point P to M3 Y
Sus. Point Y to M3 Y
Total Y
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

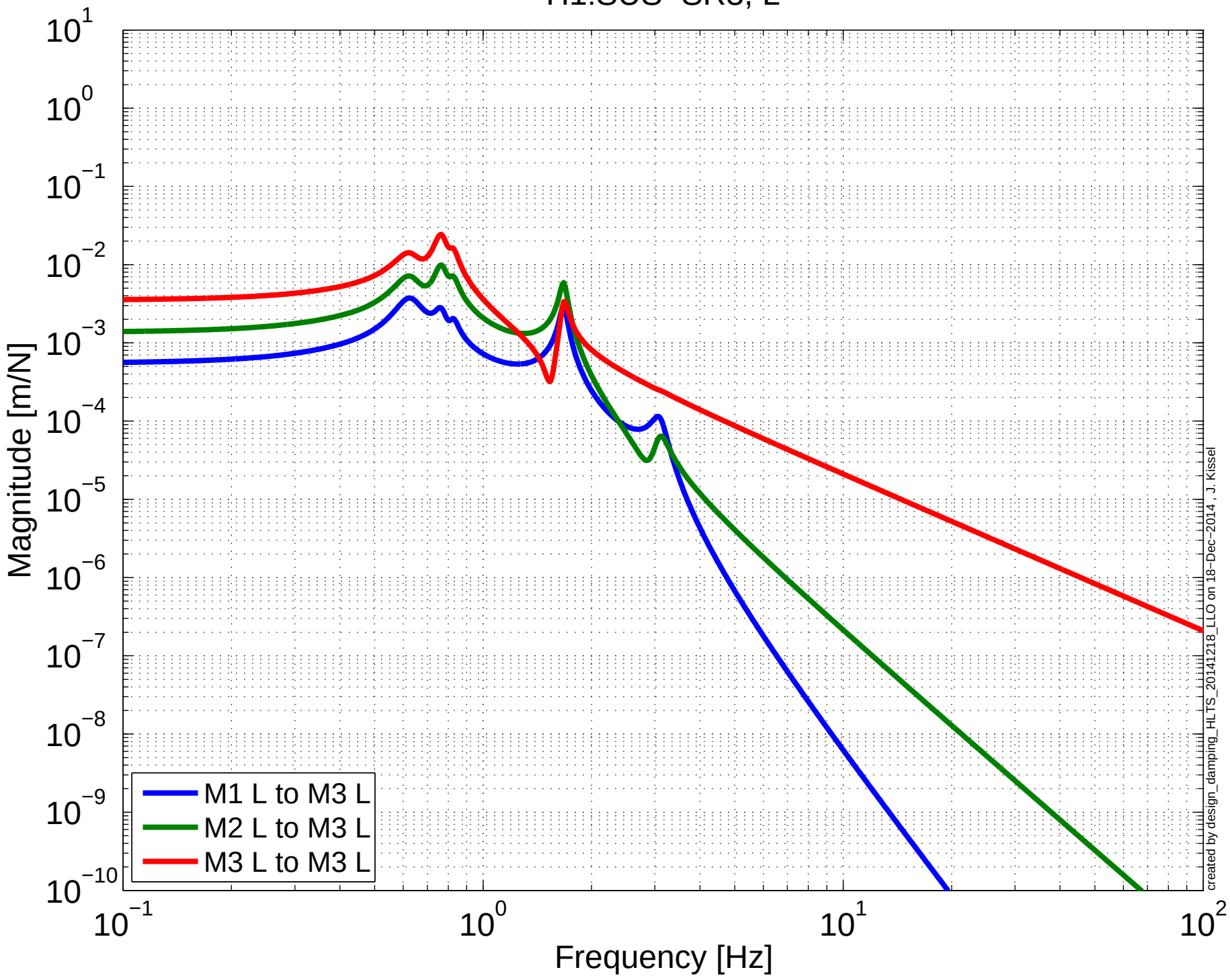

Projected Top Mass Sensor > Optic Noise Budget
H1:SUS−SR3, Y Optic Displacement
M1 L to M3 Y
M1 T to M3 Y
M1 V to M3 Y
M1 R to M3 Y
M1 P to M3 Y
M1 Y to M3 Y
Total Y
Raw Sensor Noise
Displacement [rad/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

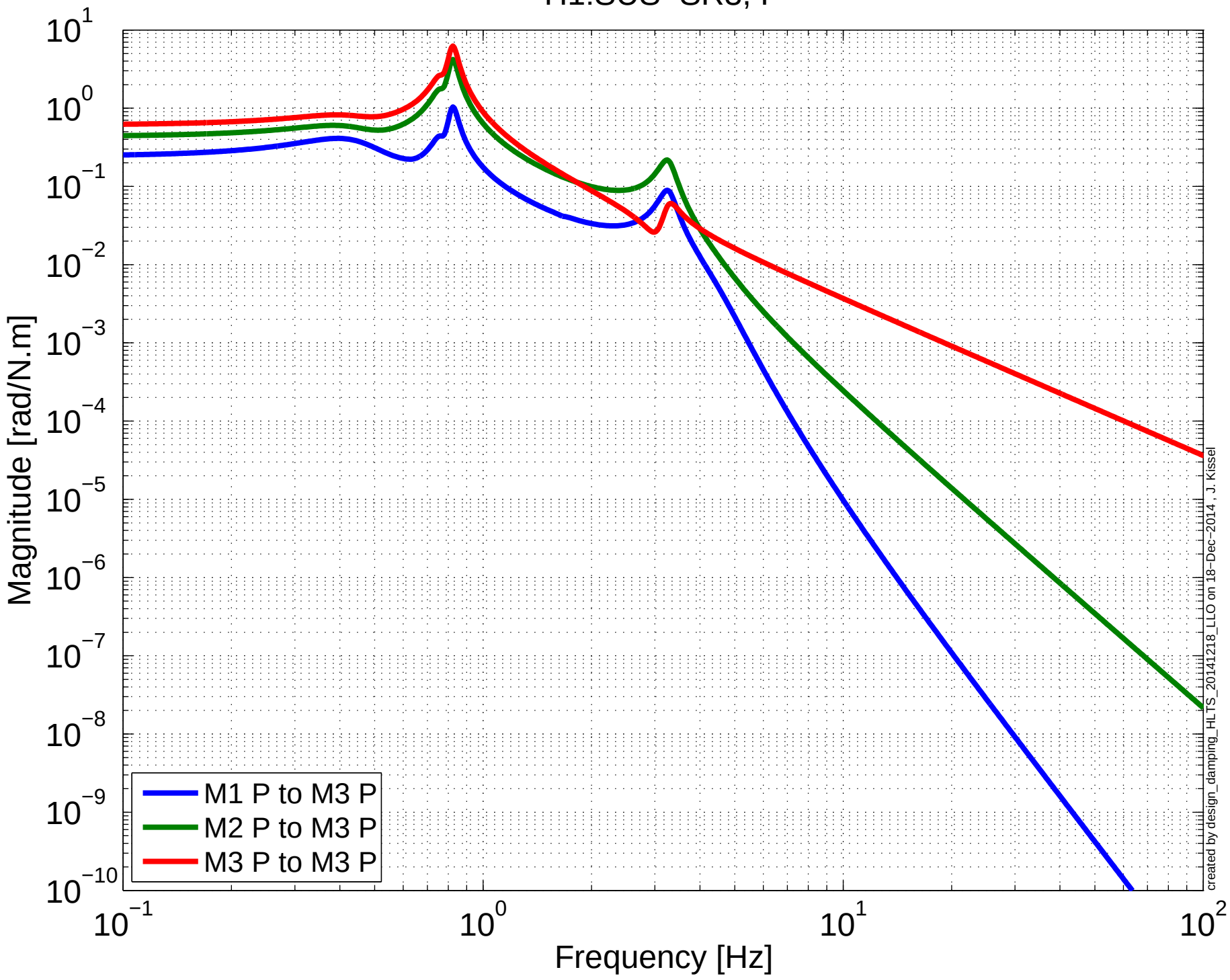

Projected M1 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, Y Optic Displacement
Displacement [rad/rtHz]
Frequency [Hz]
M1 L to M3 Y
M1 T to M3 Y
M1 V to M3 Y
M1 R to M3 Y
M1 P to M3 Y
M1 Y to M3 Y
M1 Total Y
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

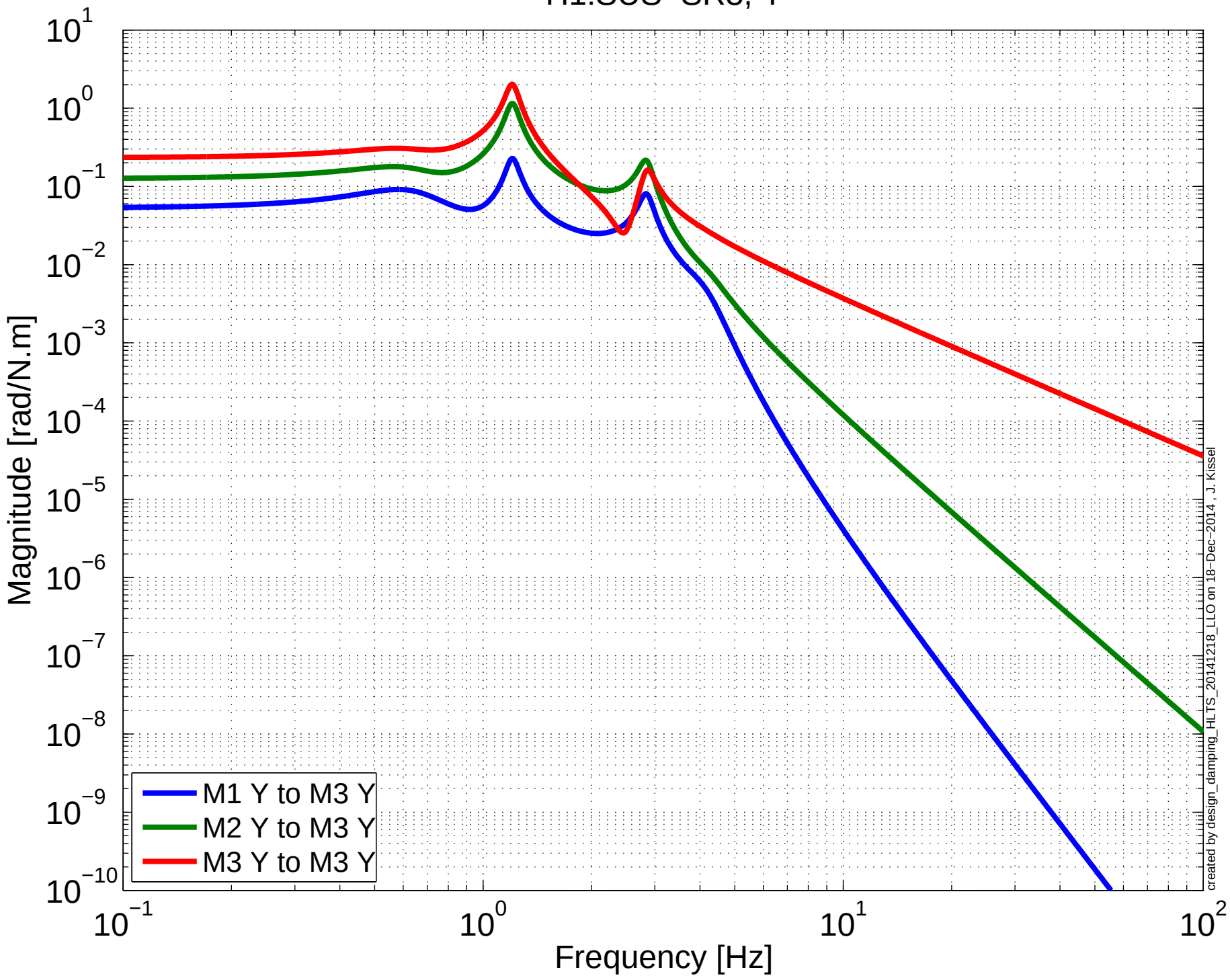

Projected M2 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, Y Optic Displacement
M2 L to M3 Y
M2 T to M3 Y
M2 V to M3 Y
M2 R to M3 Y
M2 P to M3 Y
M2 Y to M3 Y
M2 Total Y
Displacement [rad/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

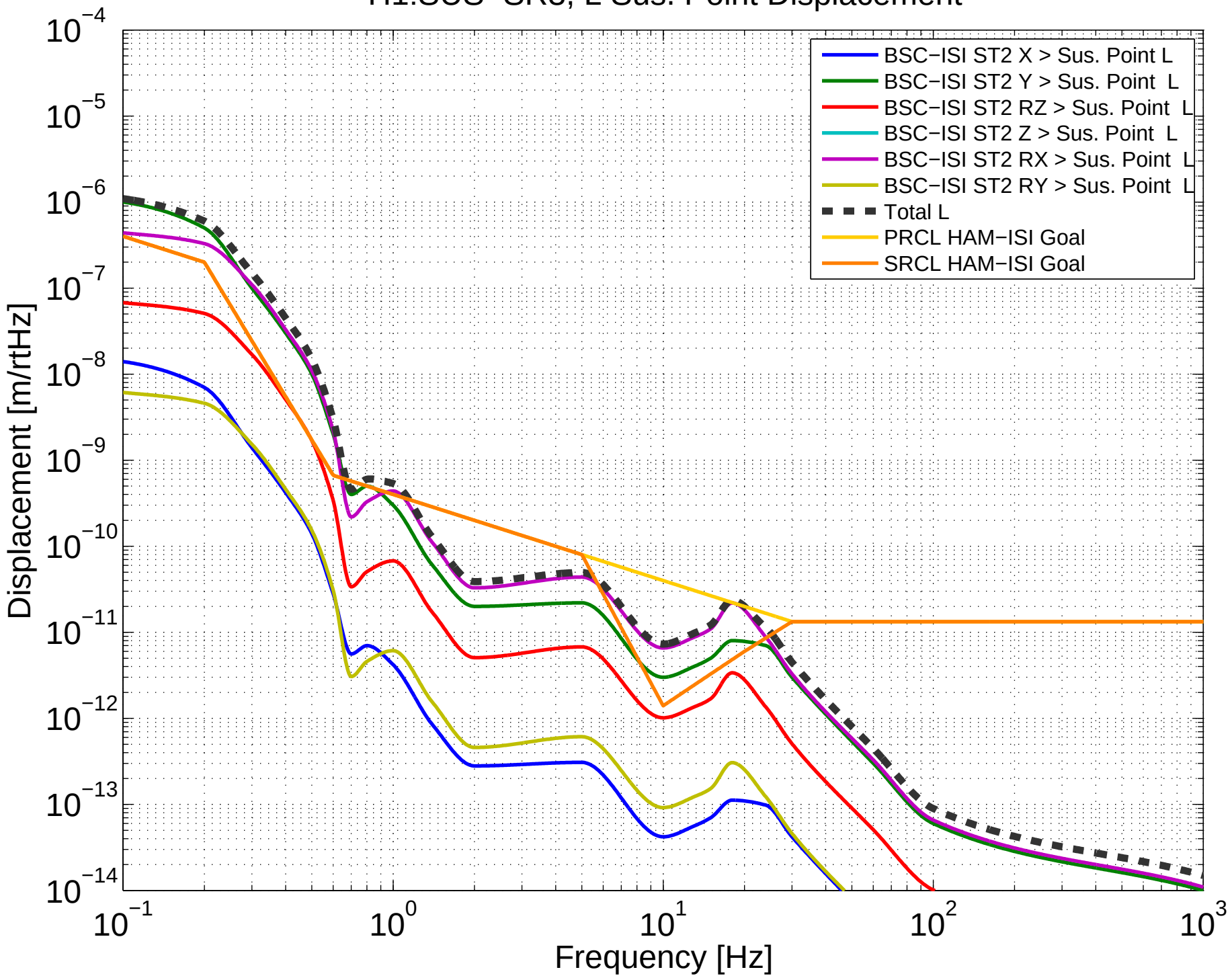

Projected M3 Mass Actuator > Optic Noise Budget
H1:SUS−SR3, Y Optic Displacement
M2 L to M3 Y
M2 T to M3 Y
M2 V to M3 Y
M2 R to M3 Y
M2 P to M3 Y
M2 Y to M3 Y
M2 Total Y
Displacement [rad/rtHz]
Frequency [Hz]
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

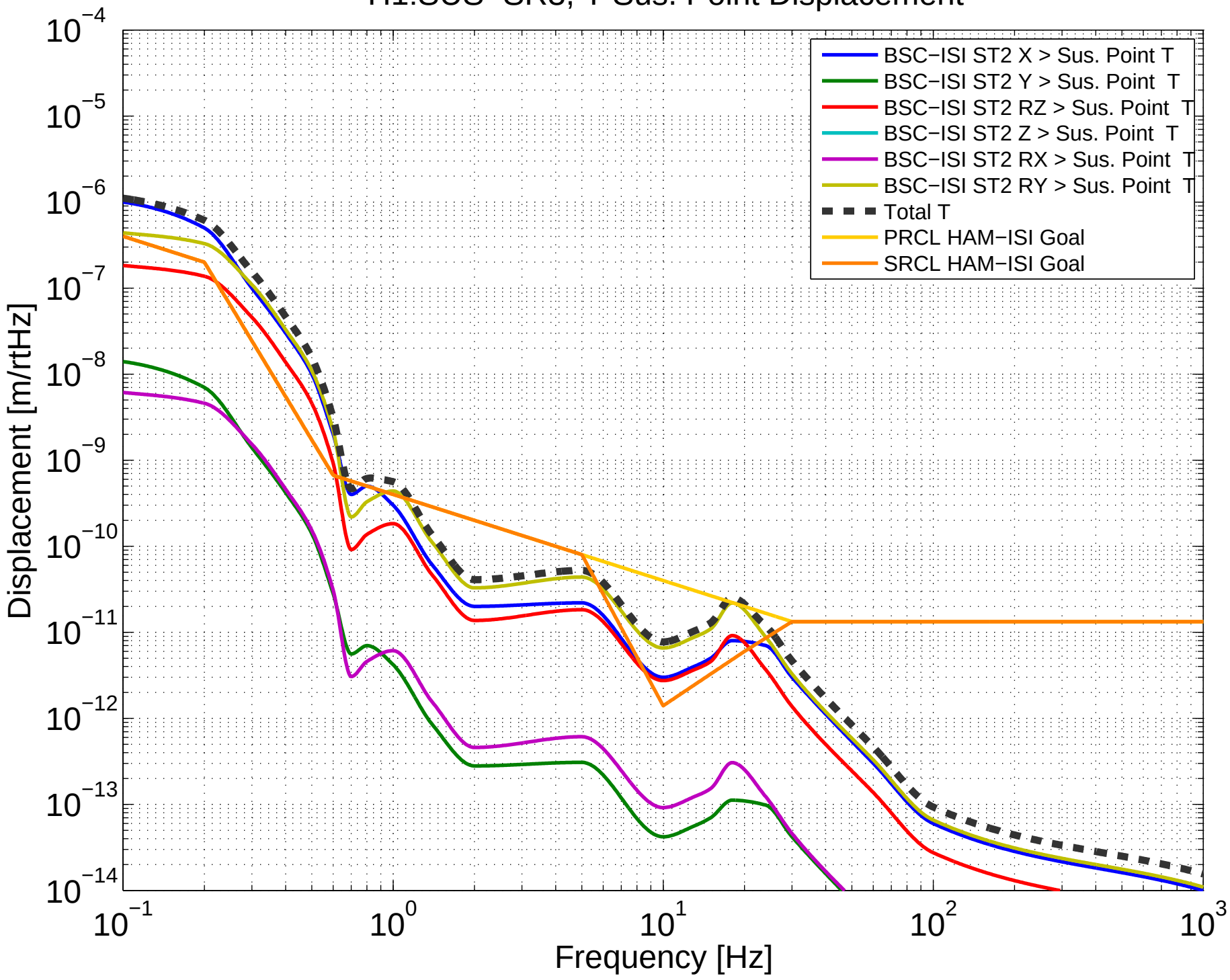

Damping Loop Performance
H1:SUS−SR3 Y Optic Displacement
Displacement [m/rtHz]
Frequency [Hz]
Residual Seismic Noise
M1 Sensor Noise
M1 Mass Actuator Noise
M2 Mass Actuator Noise
M2 Mass Actuator Noise
Total
Requirements
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

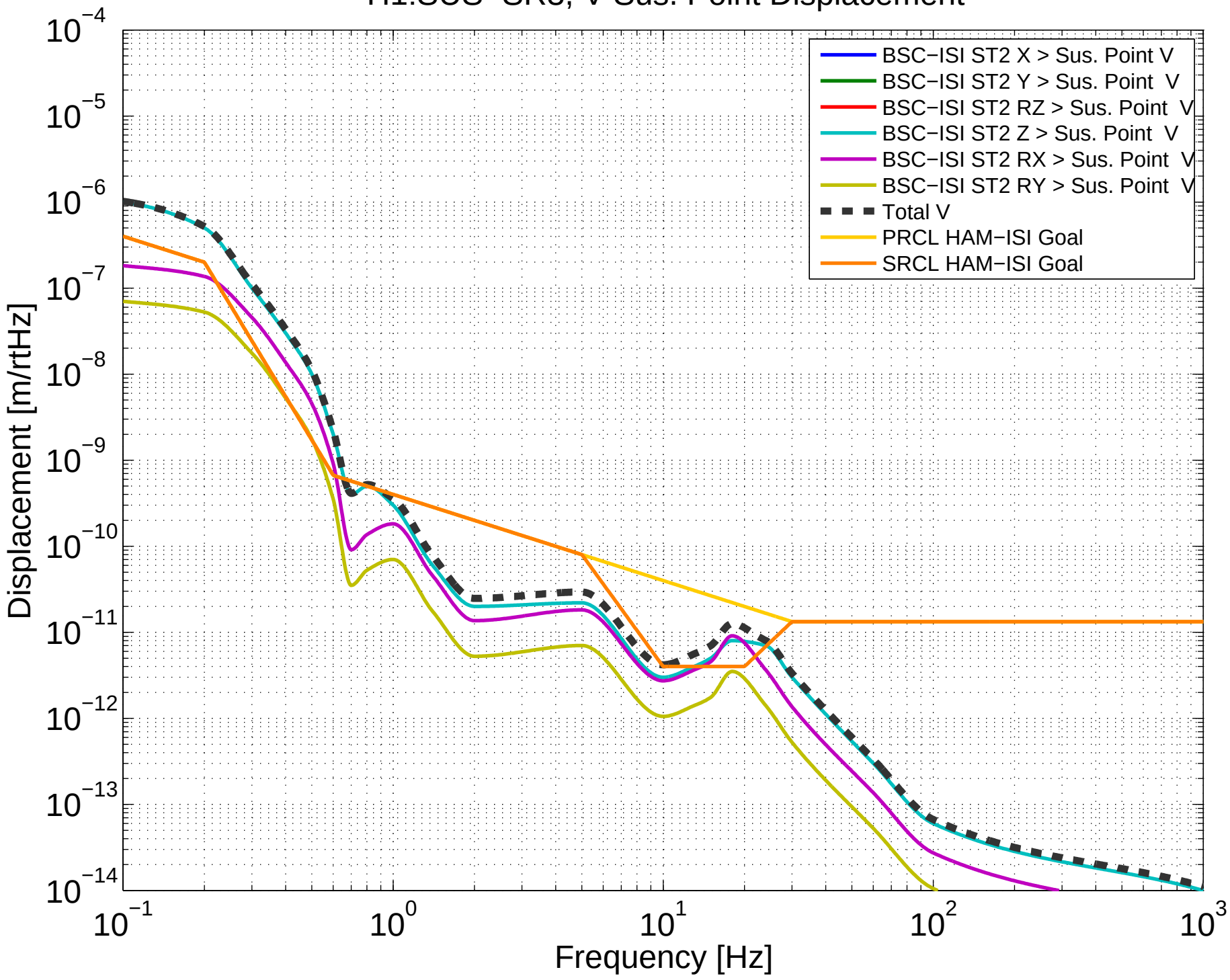

Global Control Transfer Functions to Optic
H1:SUS−SR3, L
Magnitude [m/N]
Frequency [Hz]
M1 L to M3 L
M2 L to M3 L
M3 L to M3 L
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

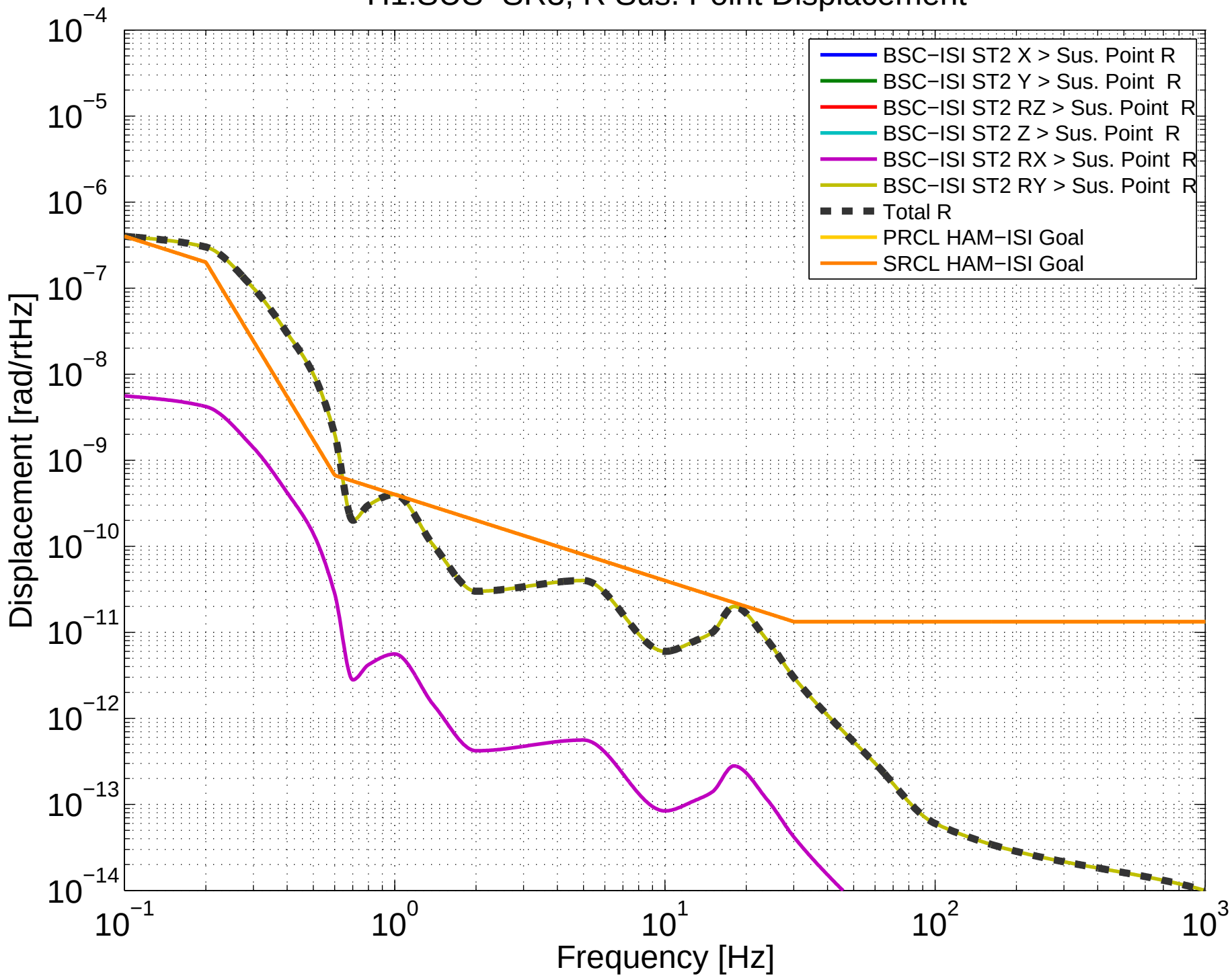

Global Control Transfer Functions to Optic
H1:SUS−SR3, P
Magnitude [rad/N.m]
Frequency [Hz]
M1 P to M3 P
M2 P to M3 P
M3 P to M3 P
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

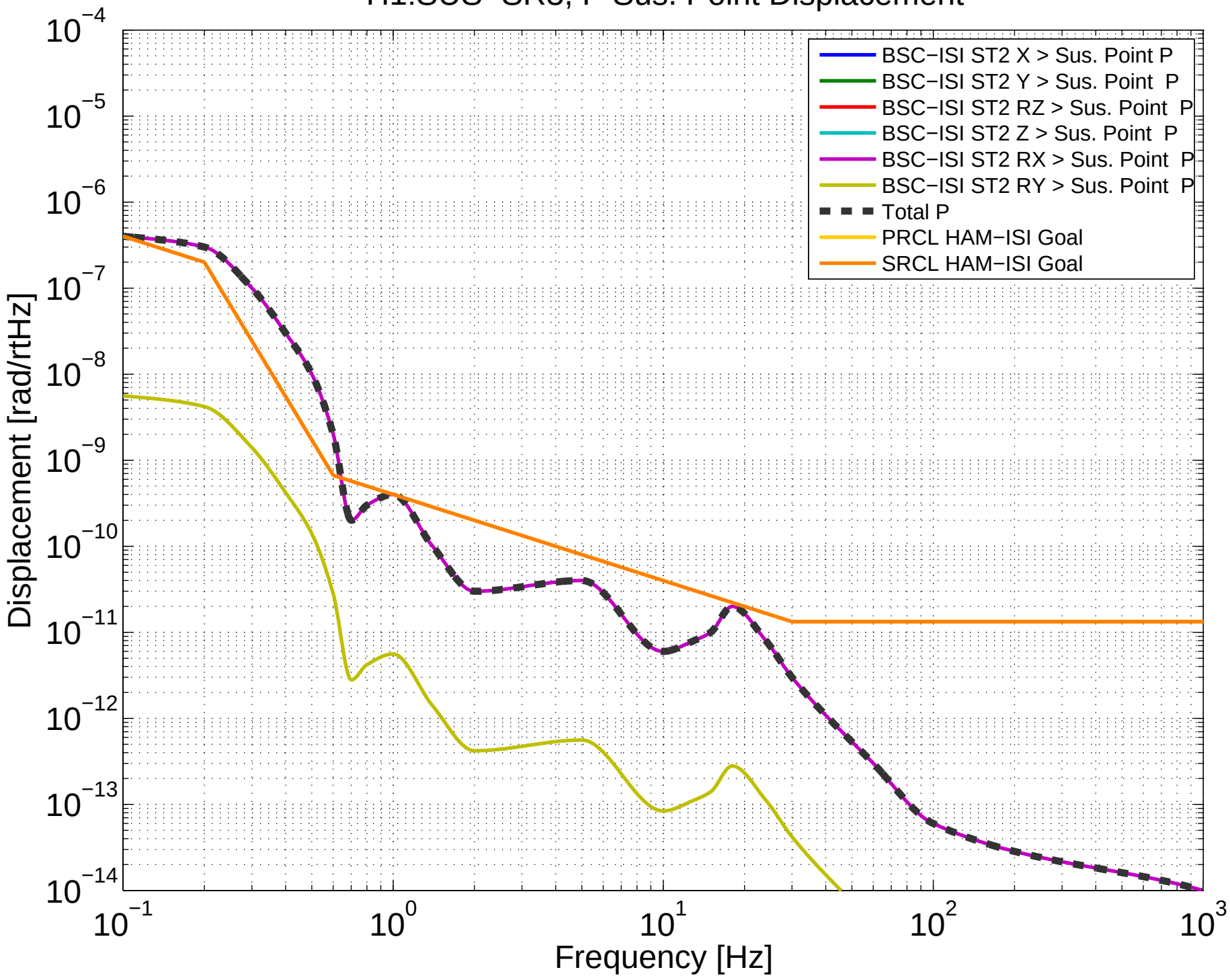

Global Control Transfer Functions to Optic
H1:SUS−SR3, Y
Magnitude [rad/N.m]
Frequency [Hz]
M1 Y to M3 Y
M2 Y to M3 Y
M3 Y to M3 Y
created by design_damping_HLTS_20141218_LLO on 18−Dec−2014 , J. Kissel

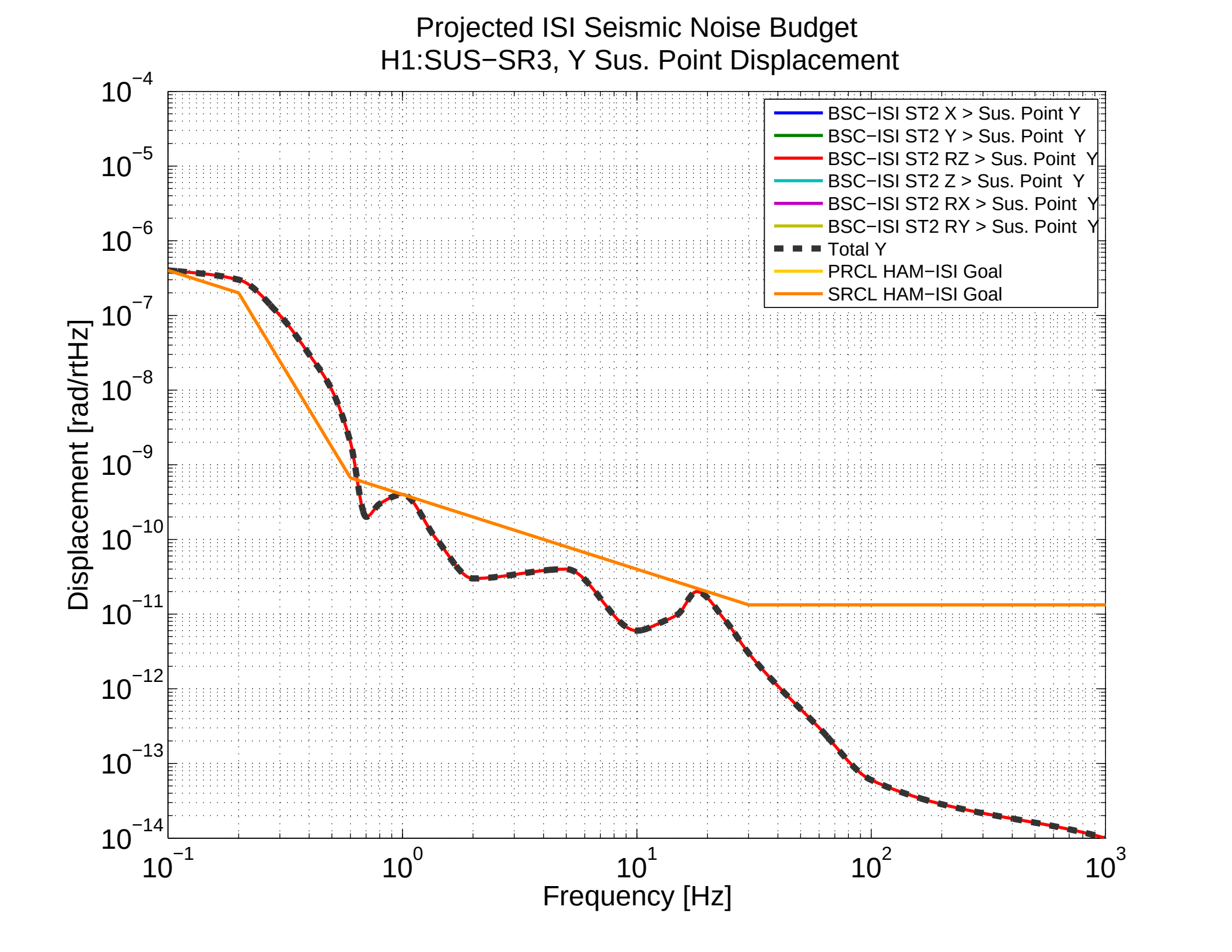

Projected ISI Seismic Noise Budget
H1:SUS−SR3, L Sus. Point Displacement
Displacement [m/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point L
BSC−ISI ST2 Y > Sus. Point L
BSC−ISI ST2 RZ > Sus. Point L
BSC−ISI ST2 Z > Sus. Point L
BSC−ISI ST2 RX > Sus. Point L
BSC−ISI ST2 RY > Sus. Point L
Total L
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal


Projected ISI Seismic Noise Budget
H1:SUS−SR3, T Sus. Point Displacement
Displacement [m/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point T
BSC−ISI ST2 Y > Sus. Point T
BSC−ISI ST2 RZ > Sus. Point T
BSC−ISI ST2 Z > Sus. Point T
BSC−ISI ST2 RX > Sus. Point T
BSC−ISI ST2 RY > Sus. Point T
Total T
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal


Projected ISI Seismic Noise Budget
H1:SUS−SR3, V Sus. Point Displacement
Displacement [m/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point V
BSC−ISI ST2 Y > Sus. Point V
BSC−ISI ST2 RZ > Sus. Point V
BSC−ISI ST2 Z > Sus. Point V
BSC−ISI ST2 RX > Sus. Point V
BSC−ISI ST2 RY > Sus. Point V
Total V
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal


Projected ISI Seismic Noise Budget
H1:SUS−SR3, R Sus. Point Displacement
Displacement [rad/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point R
BSC−ISI ST2 Y > Sus. Point R
BSC−ISI ST2 RZ > Sus. Point R
BSC−ISI ST2 Z > Sus. Point R
BSC−ISI ST2 RX > Sus. Point R
BSC−ISI ST2 RY > Sus. Point R
Total R
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal


Projected ISI Seismic Noise Budget
H1:SUS−SR3, P Sus. Point Displacement
Displacement [rad/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point P
BSC−ISI ST2 Y > Sus. Point P
BSC−ISI ST2 RZ > Sus. Point P
BSC−ISI ST2 Z > Sus. Point P
BSC−ISI ST2 RX > Sus. Point P
BSC−ISI ST2 RY > Sus. Point P
Total P
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal


Projected ISI Seismic Noise Budget
H1:SUS−SR3, Y Sus. Point Displacement
Displacement [rad/rtHz]
Frequency [Hz]
BSC−ISI ST2 X > Sus. Point Y
BSC−ISI ST2 Y > Sus. Point Y
BSC−ISI ST2 RZ > Sus. Point Y
BSC−ISI ST2 Z > Sus. Point Y
BSC−ISI ST2 RX > Sus. Point Y
BSC−ISI ST2 RY > Sus. Point Y
Total Y
PRCL HAM−ISI Goal
SRCL HAM−ISI Goal