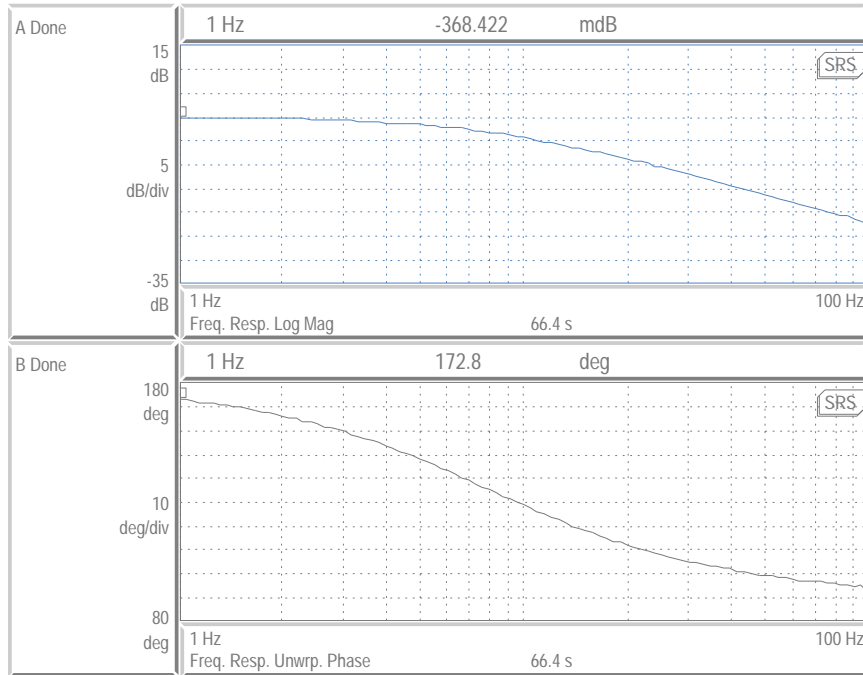


Appendix 1:

Monitor Channel Filtering:



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Figure 1:IN to INPUT Mon

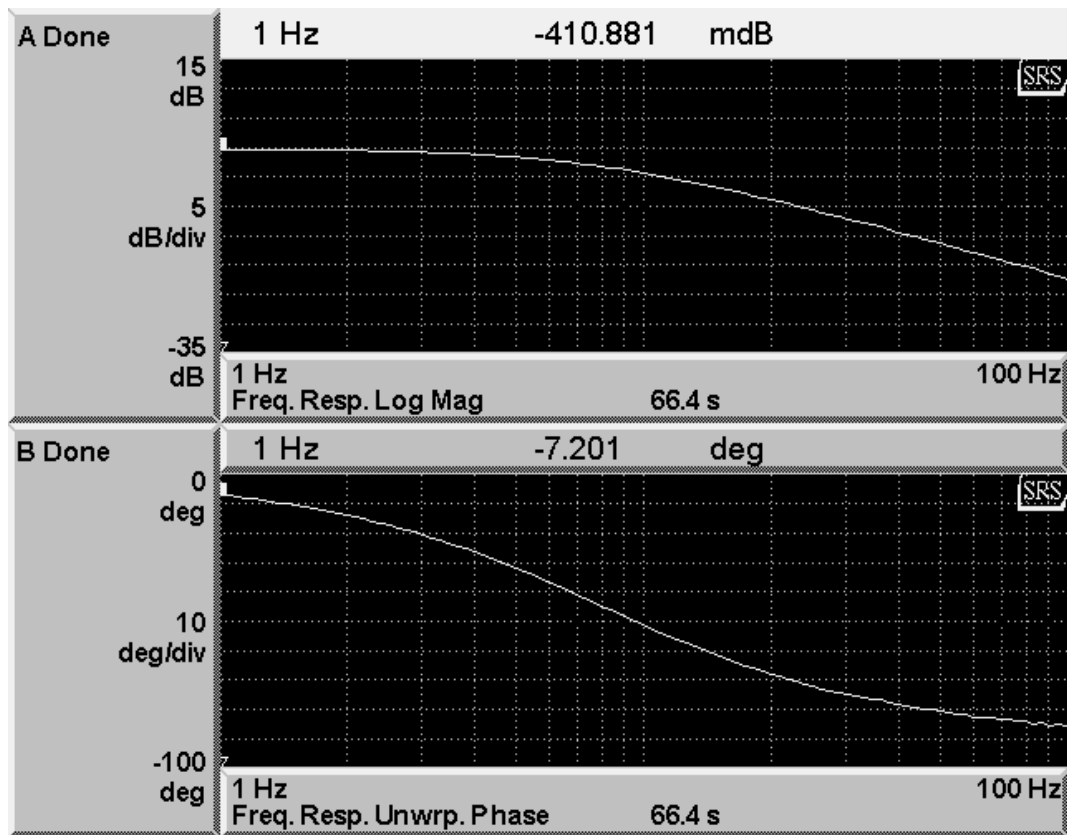


Figure 2: In to OUput Mon

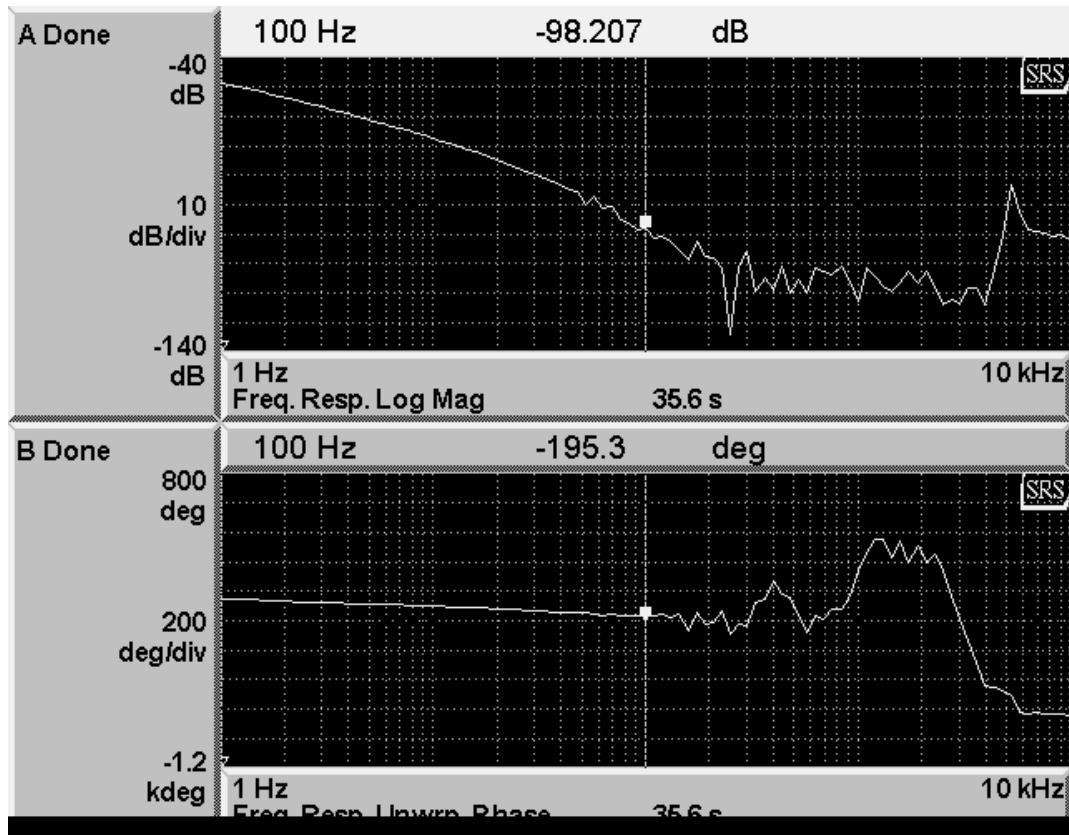


Figure 3: Output Adjust to VCO

Appendix 2: Harmonic Distortion

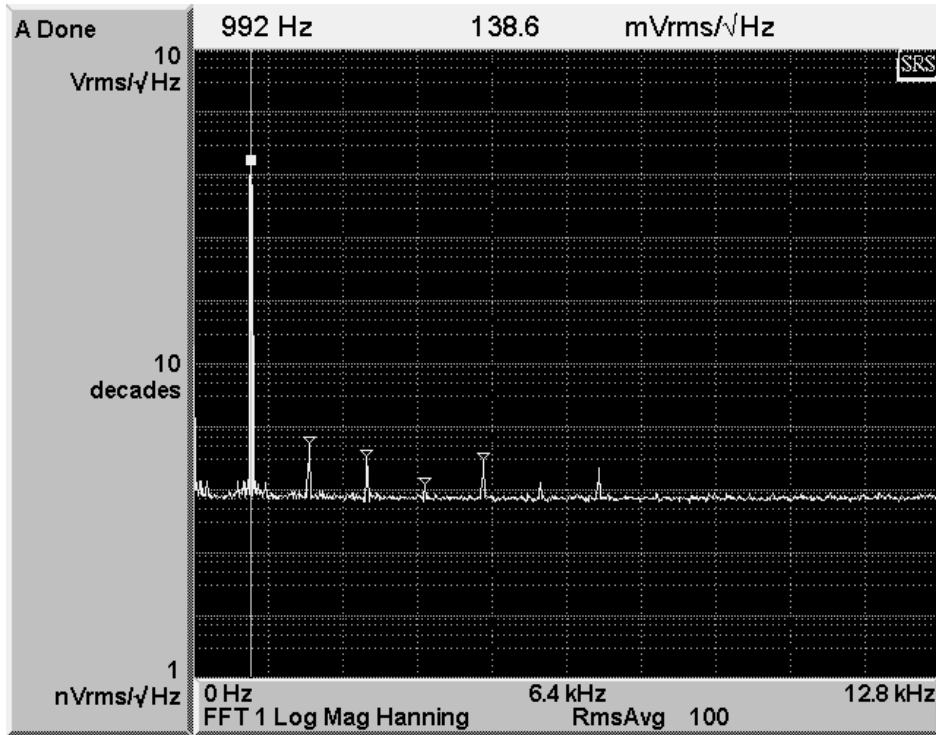


Figure 4: Harmonic Distortion In to VCO out

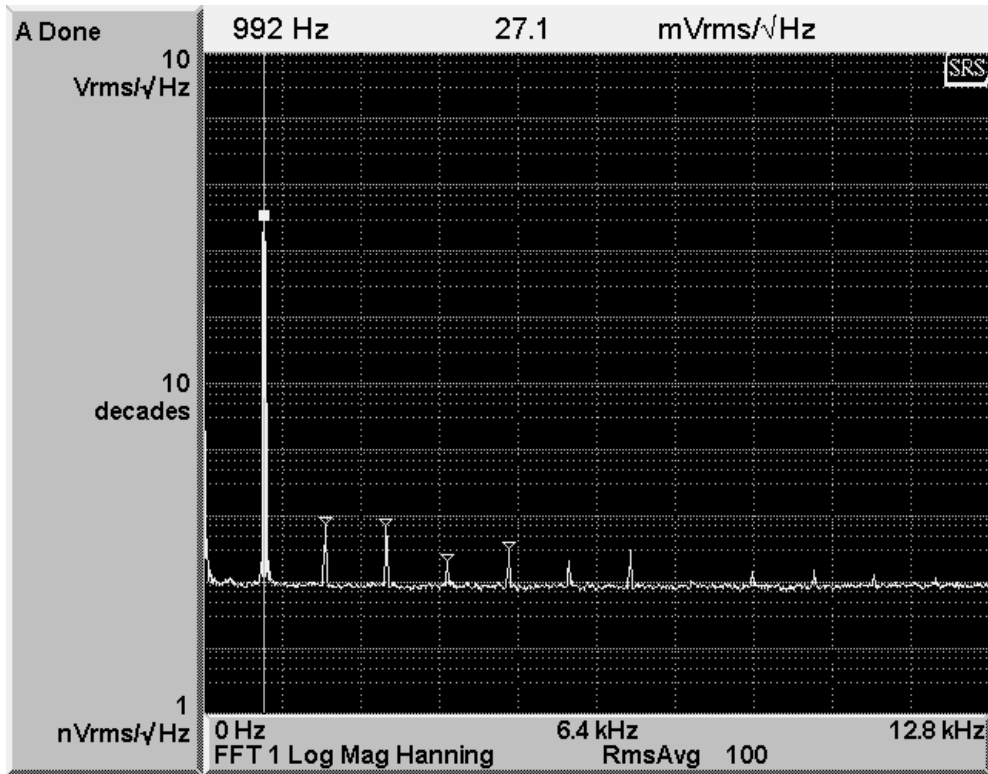


Figure 5: Harmonic Distortion In to f/phi out

Appendix 3: Noise Measurements

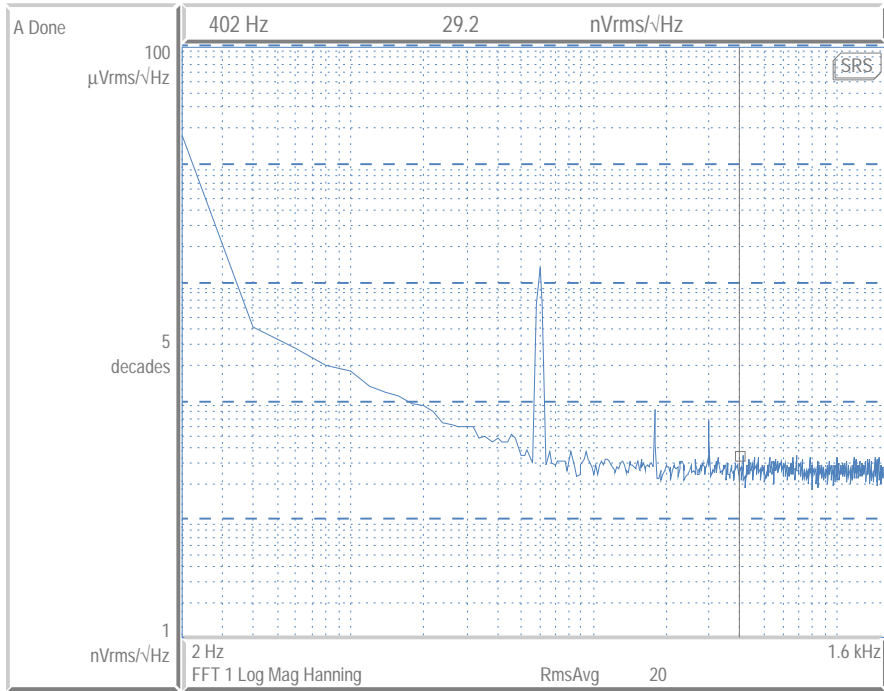


Figure 6: VCO out noise spectra, log space

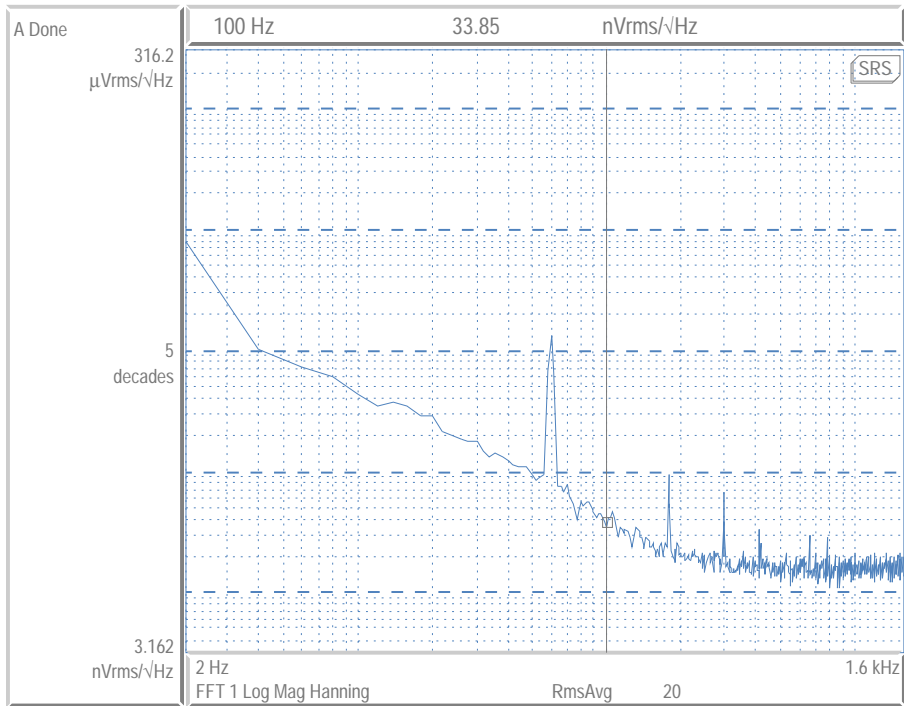
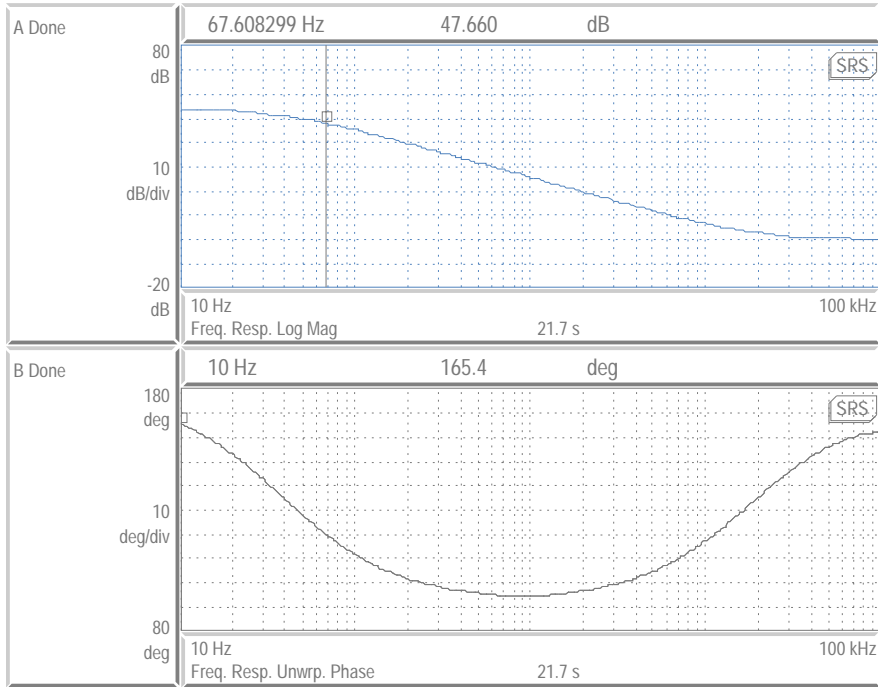


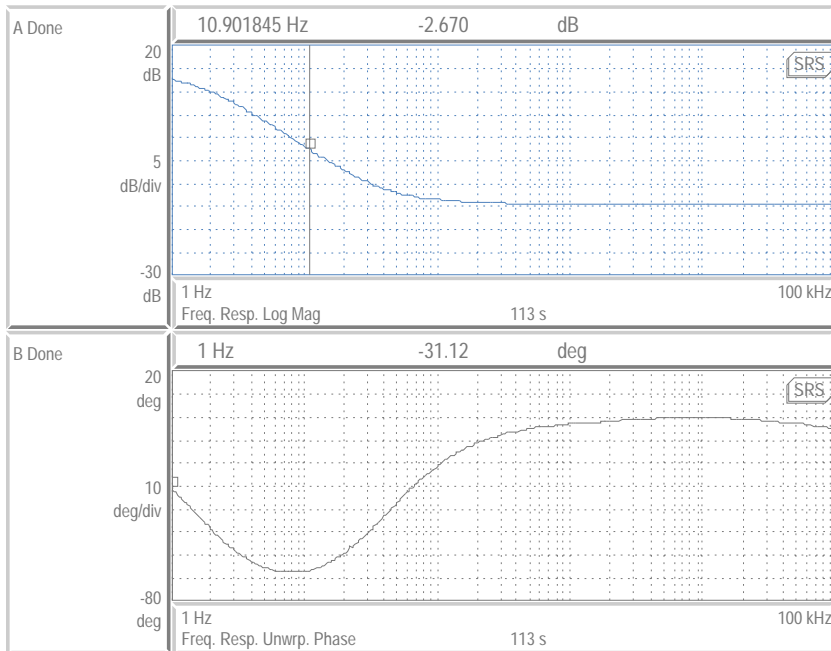
Figure 7: f/ϕ Out noise spectra, log space on frequency axis

Appendix 3: Transfer Functions



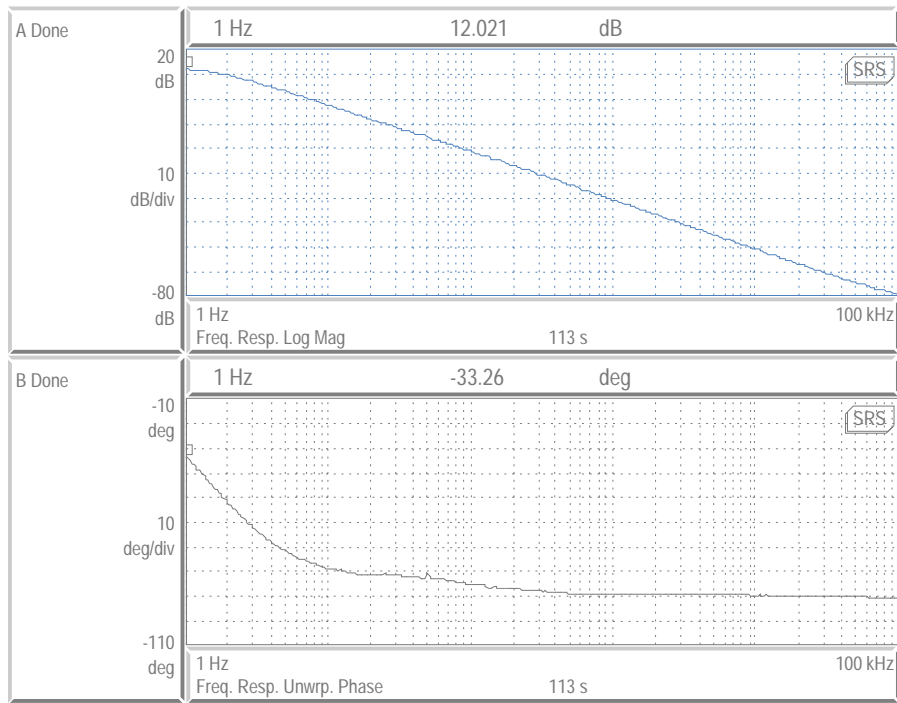
11/26/13 17:50:05

Figure 8: IN 1 to VCO out, D3 down transfer function



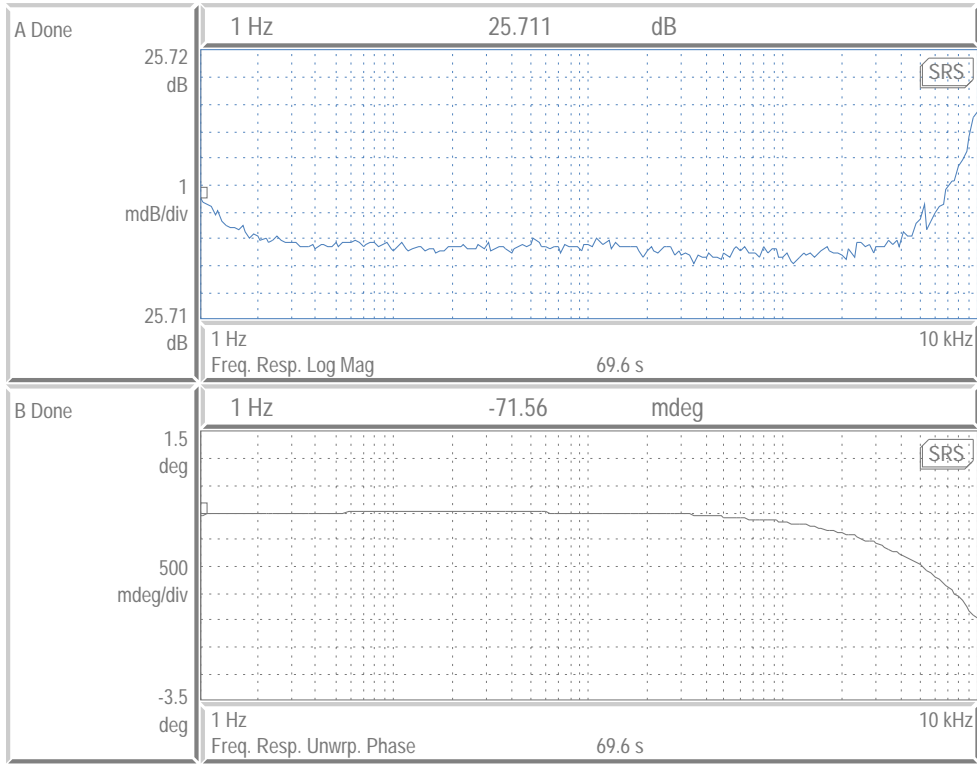
11/26/13 17:54:11

Figure 9: Transfer Function: In to f/ϕ : D2, D12, D13, and D14 down



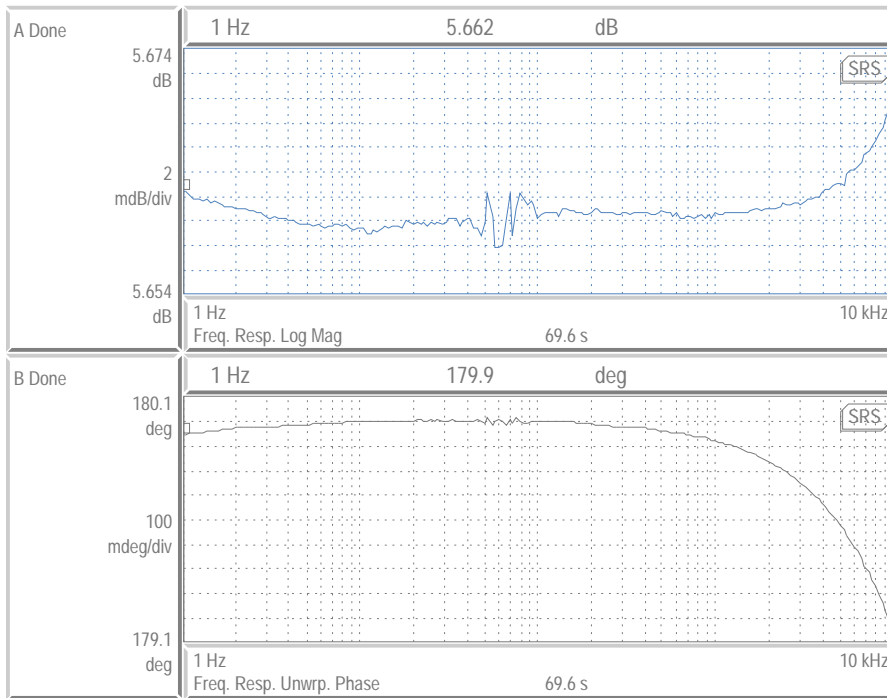
11/26/13 18:09:25

Figure 10: In to $f/\phi D2$ and D15 down transfer function



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Figure 11: transfer function from IN to INMON DAQ channel



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Figure 12: In to Control mon TF

High frequency transfer functions

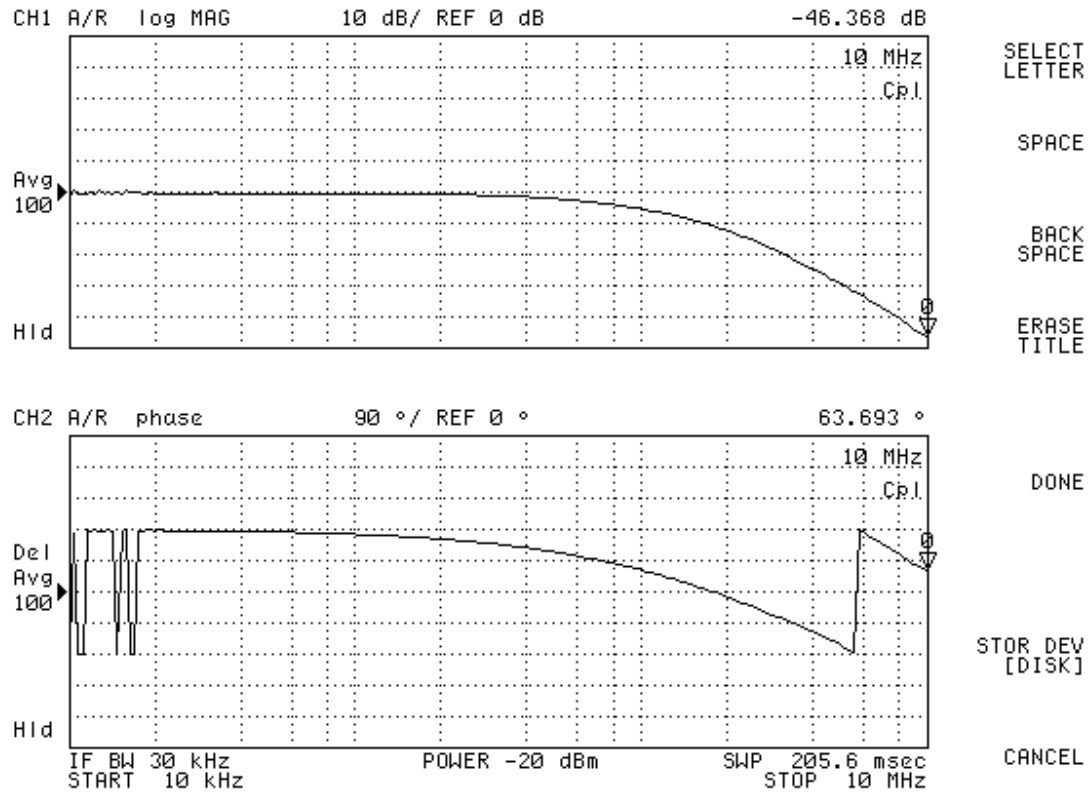


Figure 13: IN to VCO out

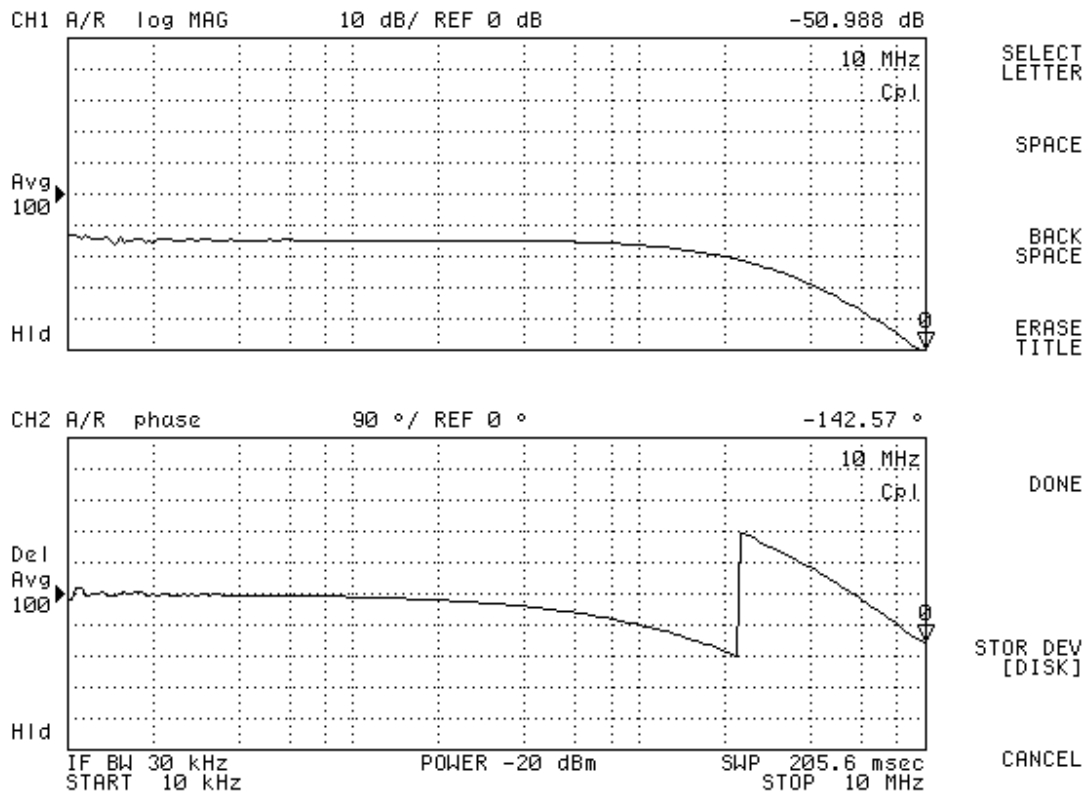


Figure 14: IN to f/phi high frequency transfer function

Appendix 3: Closed loop transfer functions

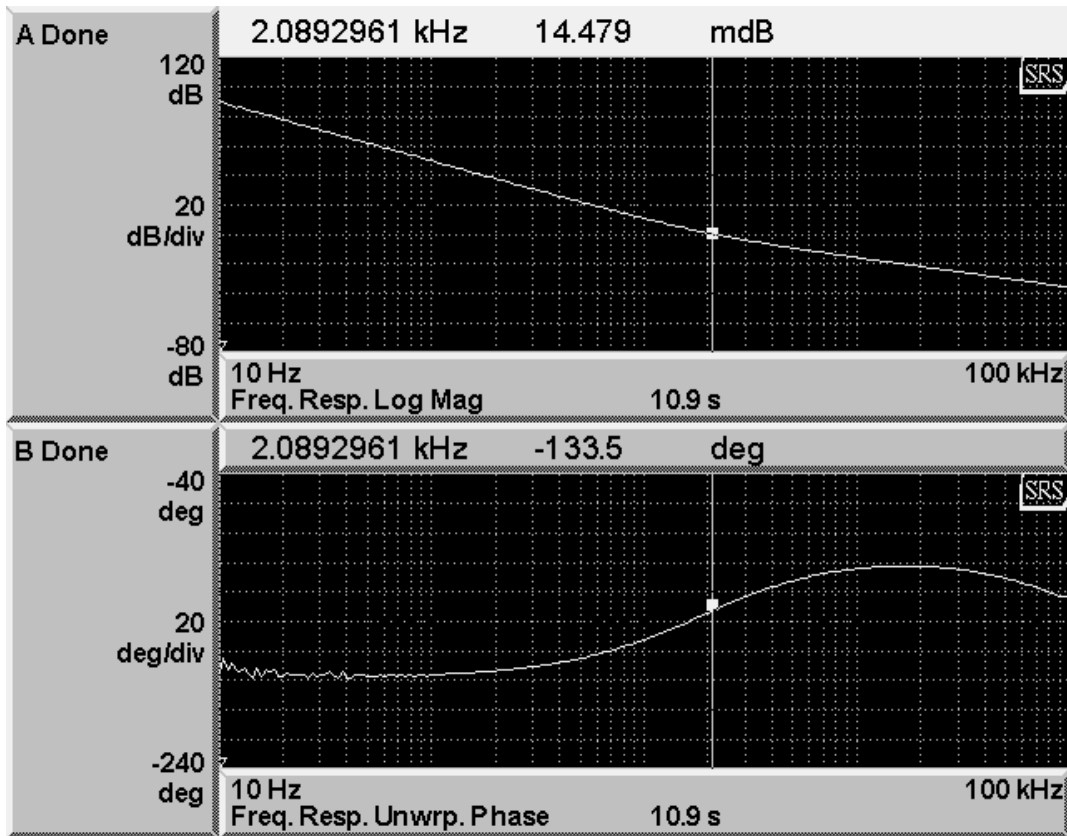


Figure 15: Two frequency difference dividers, PLL in default configuration (all switches up)

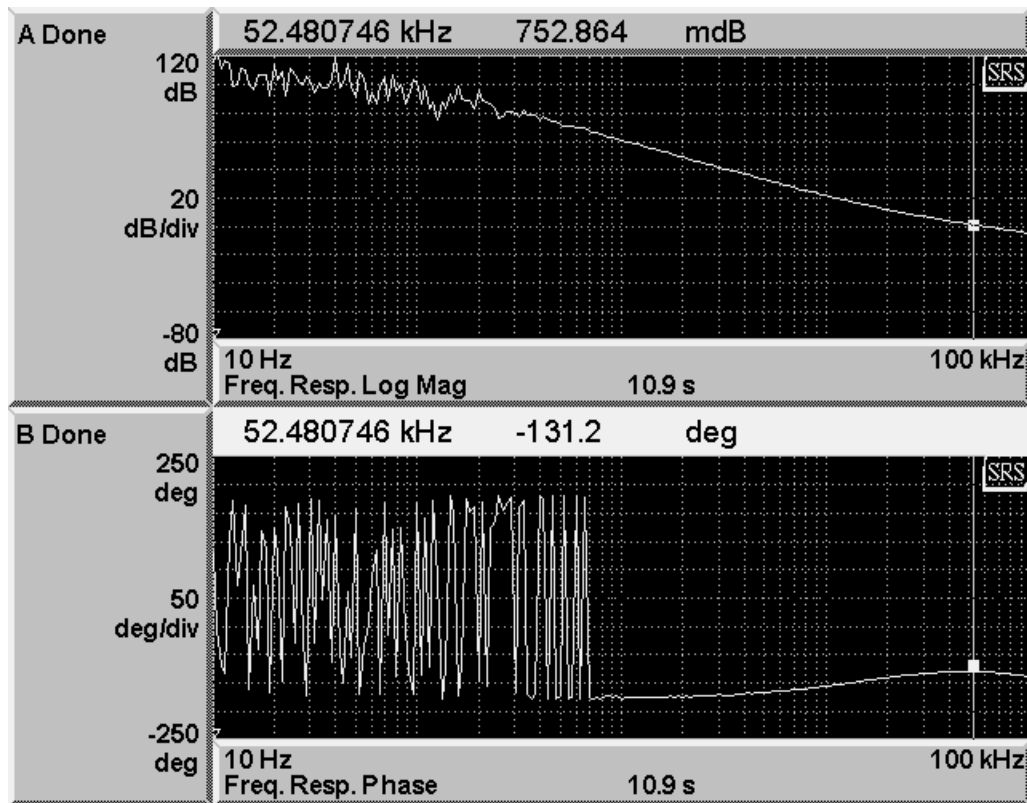


Figure 16: Two frequency difference dividers, +32dB of gain and both compensation filters engaged (LF+HF)

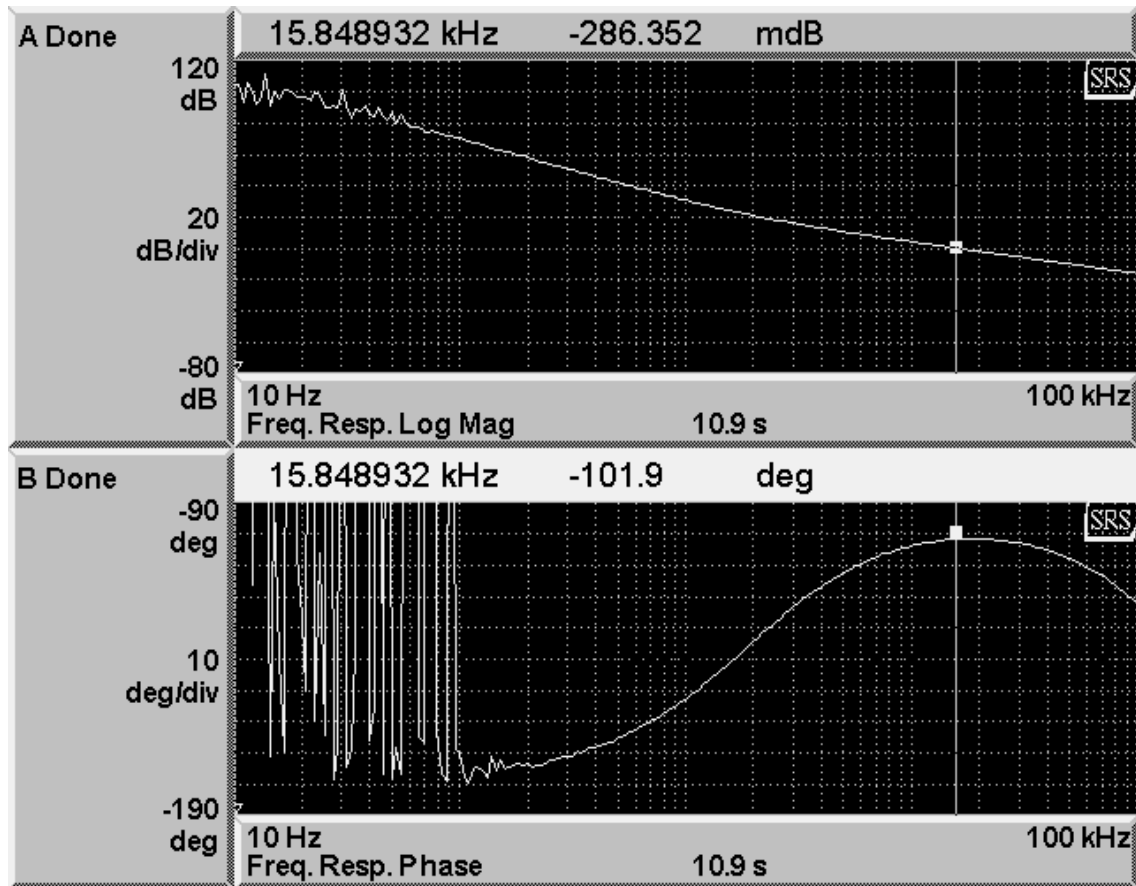


Figure 17: One frequency difference divider (normal VCO) and default settings on PLL

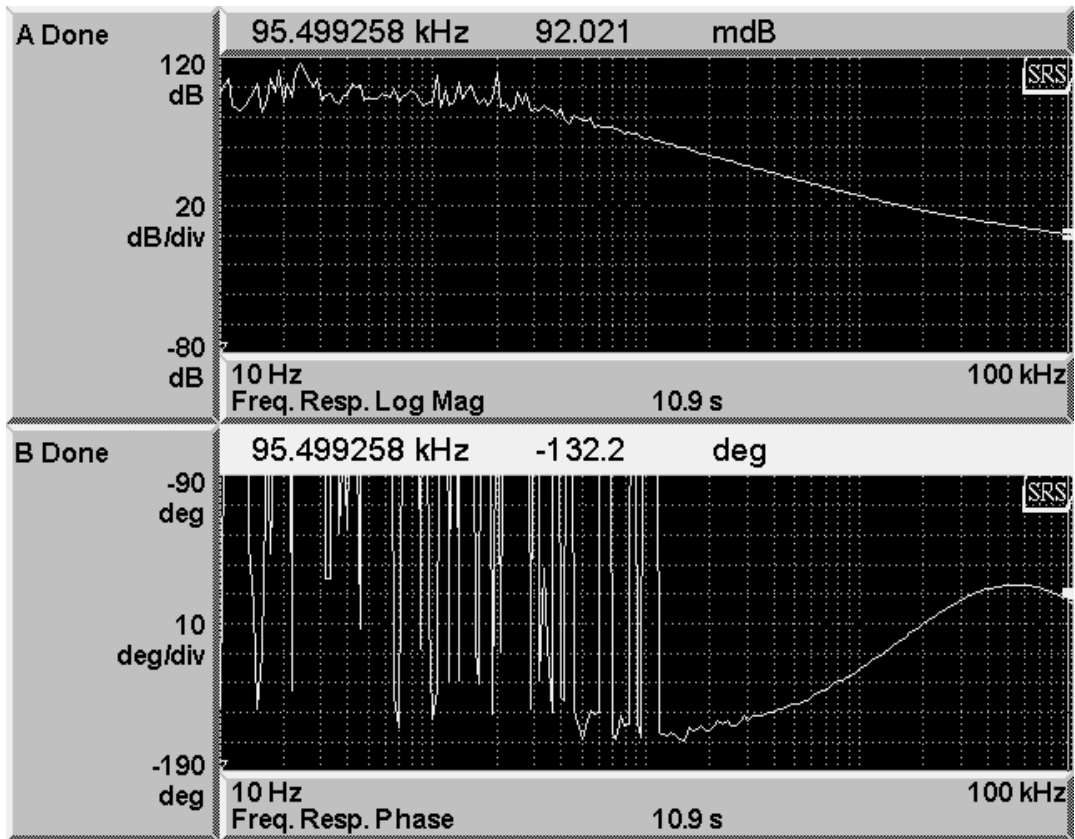


Figure 18: Normal VCO (1 FDD) +16dB of gain, LF and HF compensation filters on