

UVLBI MEMO #008

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To: U-VLBI Group

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Subject: LMX2531 for frequency standard phase noise comparisons

The National semiconductor LMX2531LQ2080E is the synthesizer we have chosen for the 1024/2048 MHz clock frequency needed for the DBE. The LMX has impressive performance and is very inexpensive. We have developed our own board with STAMP controller to set the LMX registers.

The following parameters have been used for best performance:

N =	409
PREC16 =	1
NUM =	240
DEN =	400
DIV2 =	1
FDM =	0
Dither =	3 (disabled)
ORDER =	3
R =	1 (for 5 MHz = 5 MHz phase detector)
R =	2 (for 10 MHz)
All other parameters were set to the defaults	

Changing the numerator from 240 to 241 changes the output frequency

$$409 + (241/400) \times 10/4 = 1024.006250$$

The coherence loss at 230 GHz for the integrated sidebands from ± 5 Hz is less than 10%.