

### DAC – ADC path (loop)

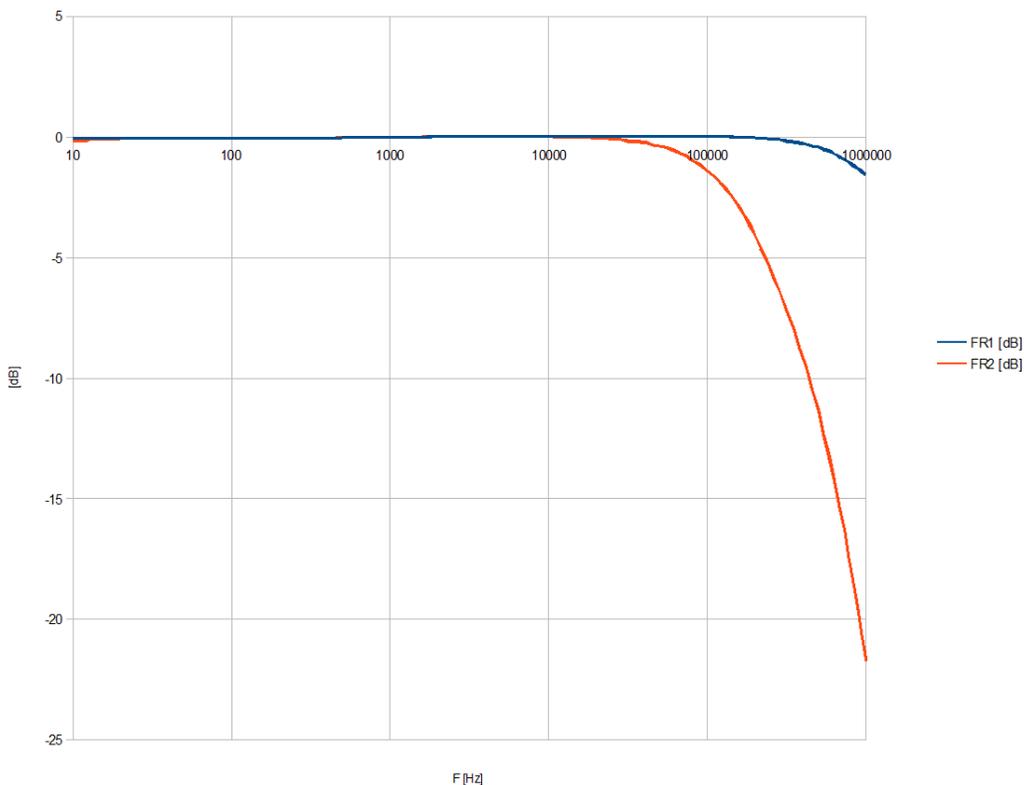
The samples were recorded at 96kHz/24bit format. The DAC-ADC loop has maximum ADC input level of 1Vrms (1dBV). Minimum of THD(1kHz) is 0.00034% at 0.24V – below this point distortion is buried in noise. At 1V, THD(1kHz) is 0.0026%. THD is quite flat with frequency, as will be seen from the posted plot. Both input and output are only single-ended, provided with RCA connectors.

### Worldstring1 preamplifier path – test report

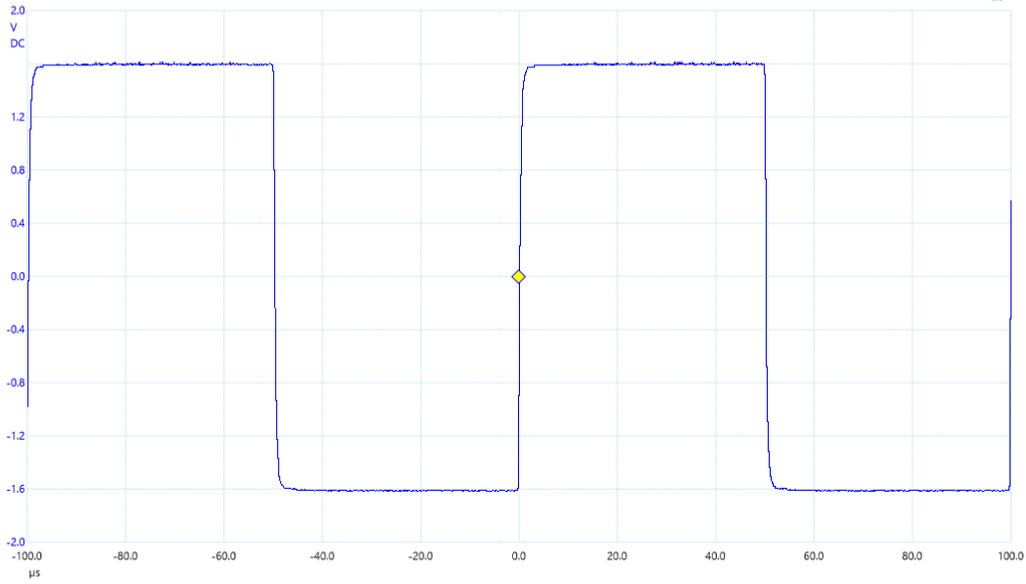
it is a preamplifier that I call “MSYS” and is intended as an analog interface for a soundcard, for measuring purposes. It is not normally used as an audio preamplifier. It has a balanced input, consisting of two 2SK170BL JFETs, followed by AD797 opamp. Then it has a gain control, stepped attenuator, DACT Danish product. This is followed by ADA4898 opamp to make a single ended output. It also has a balanced output, which was not used in this test. Because the DAC output is only single-ended, the parameters of the balanced input were not fully utilized and the distortion parameters were thus degraded a bit. However, some parameters remained quite remarkable, IMO.

Frequency response	20Hz – 40kHz / better than +/-0.02dB
Frequency response	10Hz – 1MHz / better than 0/-1.6dB
Rise time Tr(10%-90%)	0.342 us
Output noise	-111dBV(A), complete DAC-preamp-ADC loop
THD(1kHz)	0.0005% at 0.1V, complete DAC-preamp-ADC loop
THD(1kHz)	0.005% at 0.7V, complete DAC-preamp-ADC loop
THD(10kHz)	0.006% at 0.7V, complete DAC-preamp-ADC loop
Input impedance	100 kohm
Output impedance	100 ohm

2 preamps frequency response



FR1...worldstring1 frequency response, FR2 ...worldstring2 frequency response

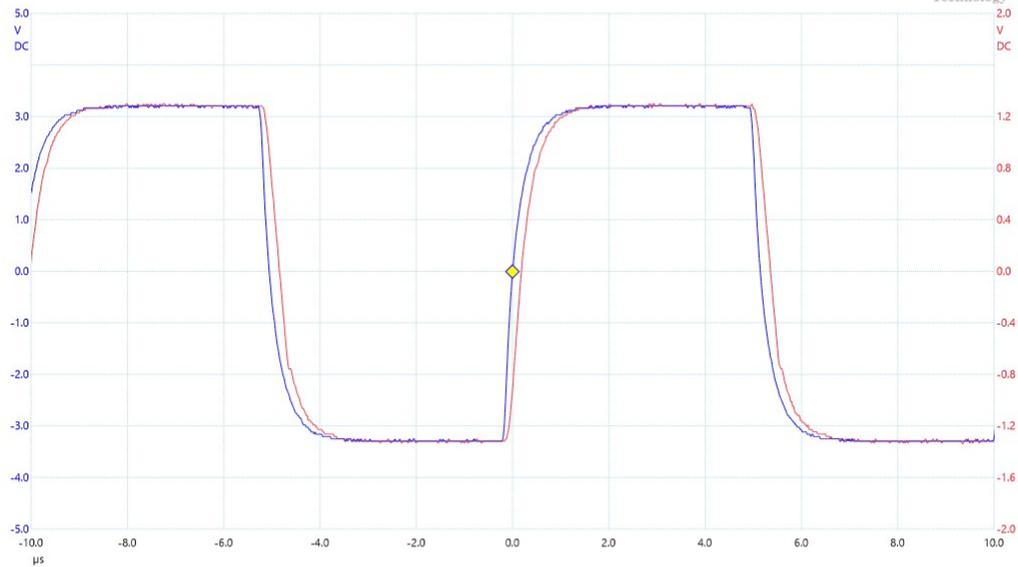


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Channel Name	Span	Value	Min	Max	Average	$\sigma$	
A	Frequency	Whole trace	10.01 kHz	10.01 kHz	10.01 kHz	0 Hz	
A	Rise Time [90/10%]	Whole trace	800 ns	800 ns	820 ns	811 ns	10.22 ns

worldstring1

*10kHz square response, rise time not corrected for input Tr*

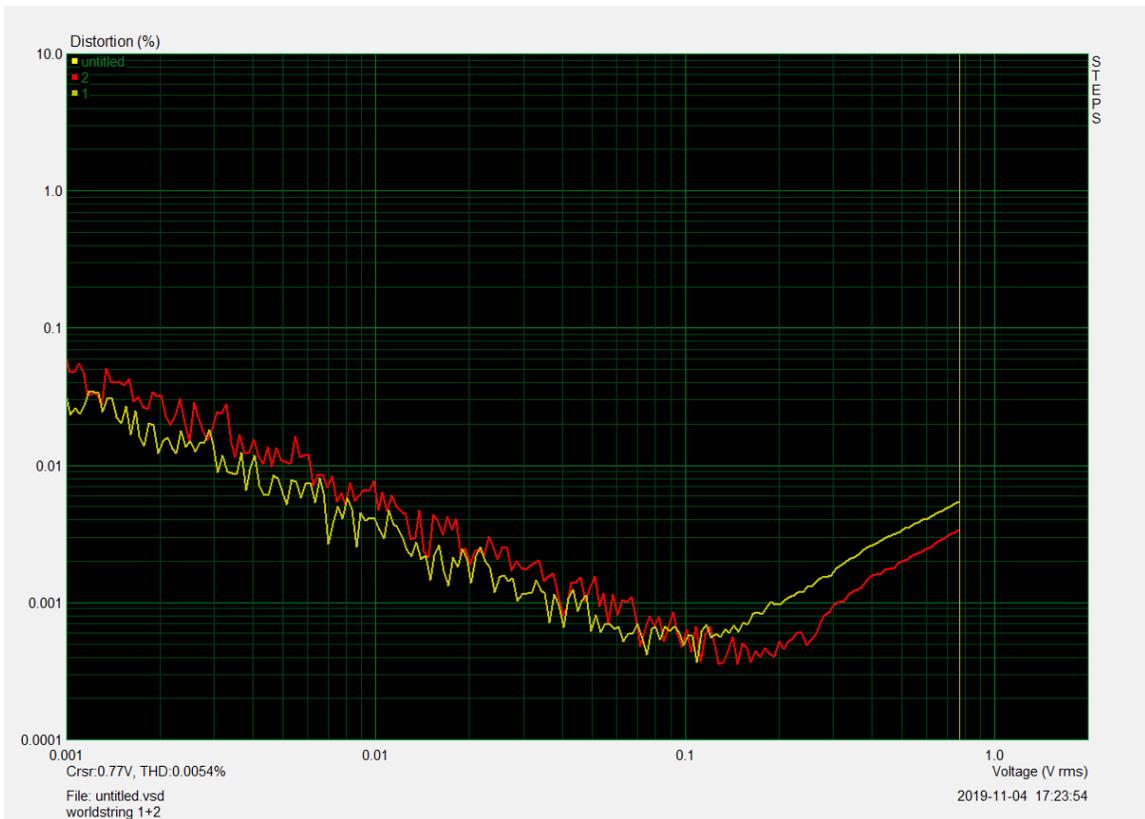


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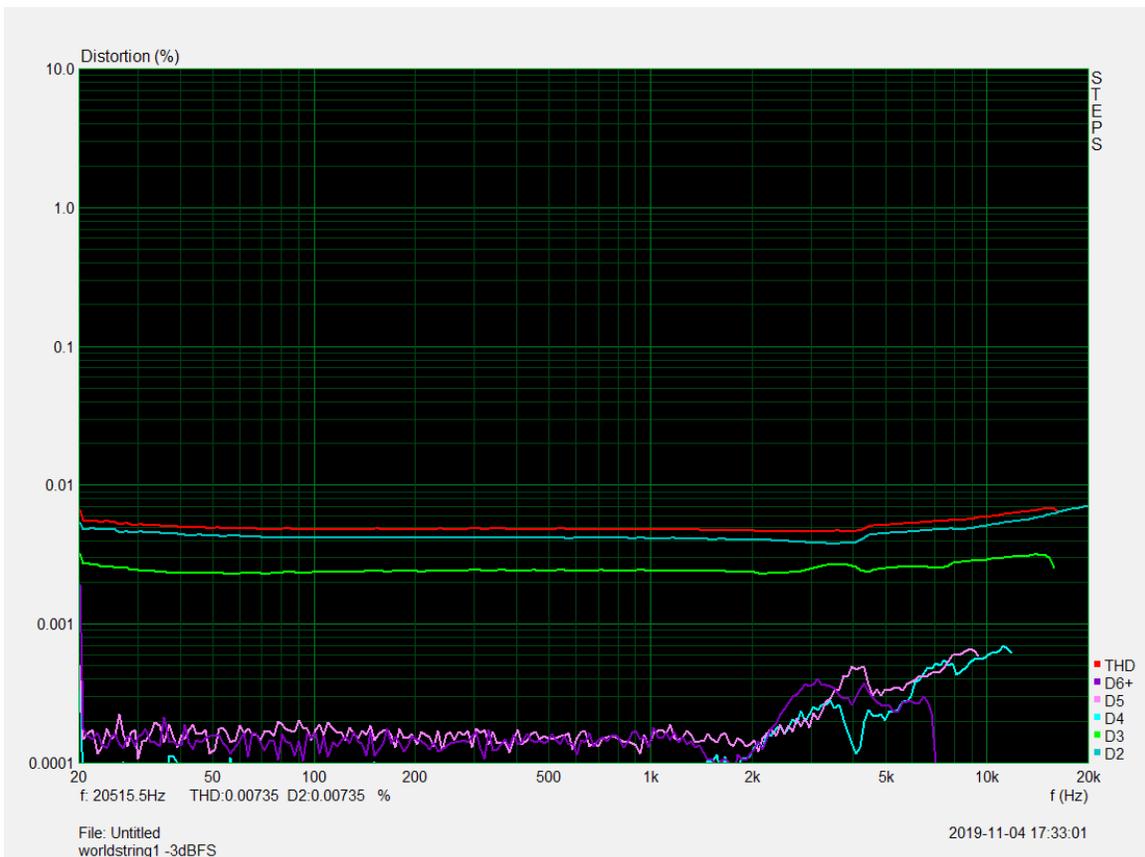
Channel Name	Span	Value	Min	Max	Average	$\sigma$
A	Frequency	Whole trace	98.04 kHz	98.04 kHz	98.04 kHz	0 Hz
A	Rise Time [90/10%]	Whole trace	690 ns	690 ns	690 ns	0 s
B	Rise Time [90/10%]	Whole trace	770 ns	770 ns	770 ns	0 s

MSYS

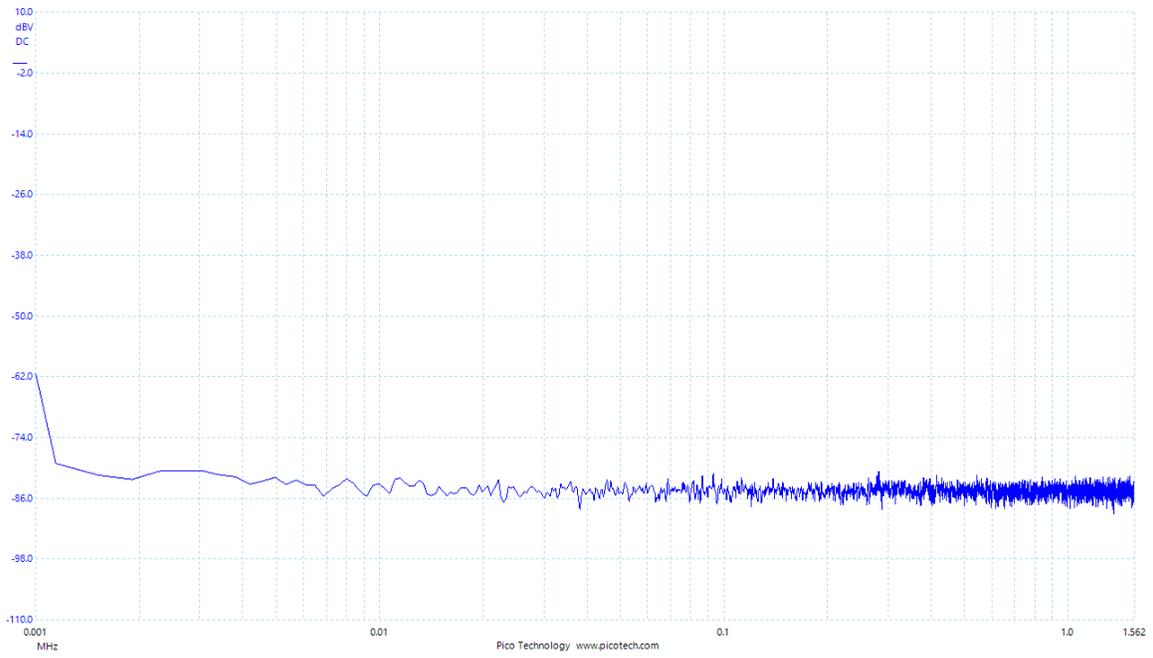
100kHz square response (red), input (blue). Corrected response  $Tr = 342ns$



Complete path, THD vs. amplitude at 1kHz. Yellow – worldstring1, Red -worldstring2



Complete path DAC-preamp-ADC, THD vs. frequency at 0.708V



*Preamp1 high frequency noise*

@PMA November 2019