Summary

MM Phono In Balanced Out	
Level and Gain	PASSED
THD+N	PASSED
IMD (SMPTE)	PASSED
Signal to Noise Ratio	PASSED
Frequency Response	PASSED
Interchannel Phase	PASSED
Continuous Sweep	PASSED
Signal Analyzer	PASSED
Signal Analyzer	PASSED
Input Overload	PASSED

MC Phono In Balanced Out	
Level and Gain	PASSED
THD+N	PASSED
IMD (SMPTE)	PASSED
Signal to Noise Ratio	PASSED
Frequency Response	PASSED
Interchannel Phase	PASSED
Continuous Sweep	PASSED
Signal Analyzer	PASSED
Signal Analyzer	PASSED
Input Overload	PASSED

Sequence Result:	
Sequence Result:	PASSED

APx Instrument	
Instrument ID:	13200
Calibration Date:	1/18/2012
APx Version:	3.4.2.237.76908

MM Phono In Balanced Out : Setup

Output Connector:	Analog Unbalanced
Channels:	2
Source Impedance:	50 Ohm
Input Connector:	Analog Unbalanced
Channels:	2
Termination:	100 kOhm
Coupling:	AC
Max Input Bandwidth:	90 kHz
Device Delay:	0.000 s

MM Phono In Balanced Out : Reference Levels

dBr G:	0.000 dBV
dBm (Output Power):	600.0 Ohm
W(watts) (Output Power):	8.000 Ohm
Shared Frequency Reference:	1.00000 kHz
dBrA:	1.000 Vrms
dBrB:	1.000 Vrms
dBrA Offset:	0.000 dB
dBrB Offset:	0.000 dB
dBSPL1:	10.00 mVrms
dBSPL2:	10.00 mVrms
dBSPL1 Calibrator Level:	94.000 dBSPL
dBSPL2 Calibrator Level:	94.000 dBSPL
dBm (Input Power):	600.0 Ohm
W(watts) (Input Power):	8.000 Ohm

Level and Gain

Waveform:	Sine
Generator Level:	-28.000 dBV
Frequency:	10.0000 kHz

Crosstalk

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		-84.013	-75.000	dBV	✓
Right		0.673		dBV	✓
Result:		✓	PASSED		

THD+N

Waveform:	Sine
Generator Level:	-40.000 dBV
Frequency:	1.00000 kHz
Weighting Filter:	A-wt.
Filter Tune Mode:	Measured Frequency

THD Ratio

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		0.007033	0.010000	%	✓
Right		0.006338	0.010000	%	✓
Result:		✓	PASSED		

IMD (SMPTE)

IMD Type:	SMPTE
Waveform:	IMD
Generator Level:	-60.000 dBV
Frequency 1:	60.0000 Hz
Frequency 2:	7.00000 kHz
Frequency Ratio:	4:1
IMD Split:	False

SMPTE Ratio

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		0.045220	0.100000	%	✓
Right		0.044028	0.100000	%	✓
Result:		✓	PASSED		

Signal to Noise Ratio

Waveform:	Sine
Generator Level:	-40.000 dBV
Frequency:	1.00000 kHz
Weighting Filter:	A-wt.

Signal to Noise Ratio

Channel	Lower Limit	Value	Upper Limit	Unit	
Left	95.000	96.856		dB	✓
Right	95.000	96.907		dB	✓
Result:		✓	PASSED		

Frequency Response

Generator Level:	-40.000 dBV
EQ:	Relative
Start Frequency:	20.0000 Hz
Stop Frequency:	20.0000 kHz
Sweep:	1.000 s
Pre-Sweep:	1.000 s
Extend Acquisition By:	50.00 ms

Deviation (20.0000 Hz - 20.0000 kHz)

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		±0.097	±0.500	dB	✓
Right		±0.114	±0.500	dB	✓
Result:		✓	PASSED		

Deviation (20.0000 Hz - 20.0000 kHz) Parameters

Min:	20.0000 Hz
Max:	20.0000 kHz

Interchannel Phase

Waveform:	Sine
Generator Level:	-40.000 dBV
Frequency:	1.00000 kHz
Reference Channel:	Left
Meter Range:	-90 -> 270 deg

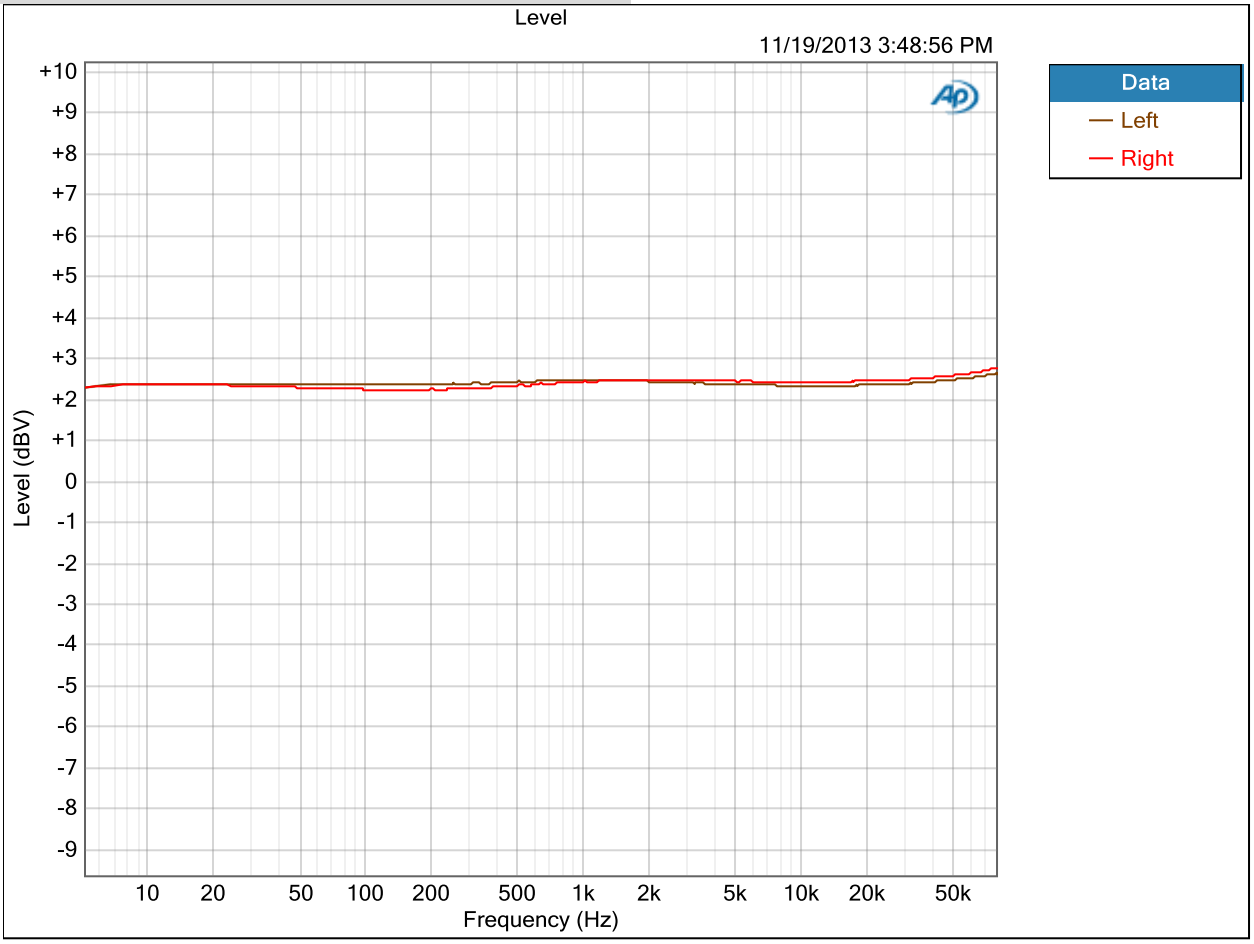
Interchannel Phase

Channel	Lower Limit	Value	Upper Limit	Unit	
Left	-1.000		1.000	deg	✓
Right	-1.000	0.621	1.000	deg	✓
Result:		✓	PASSED		

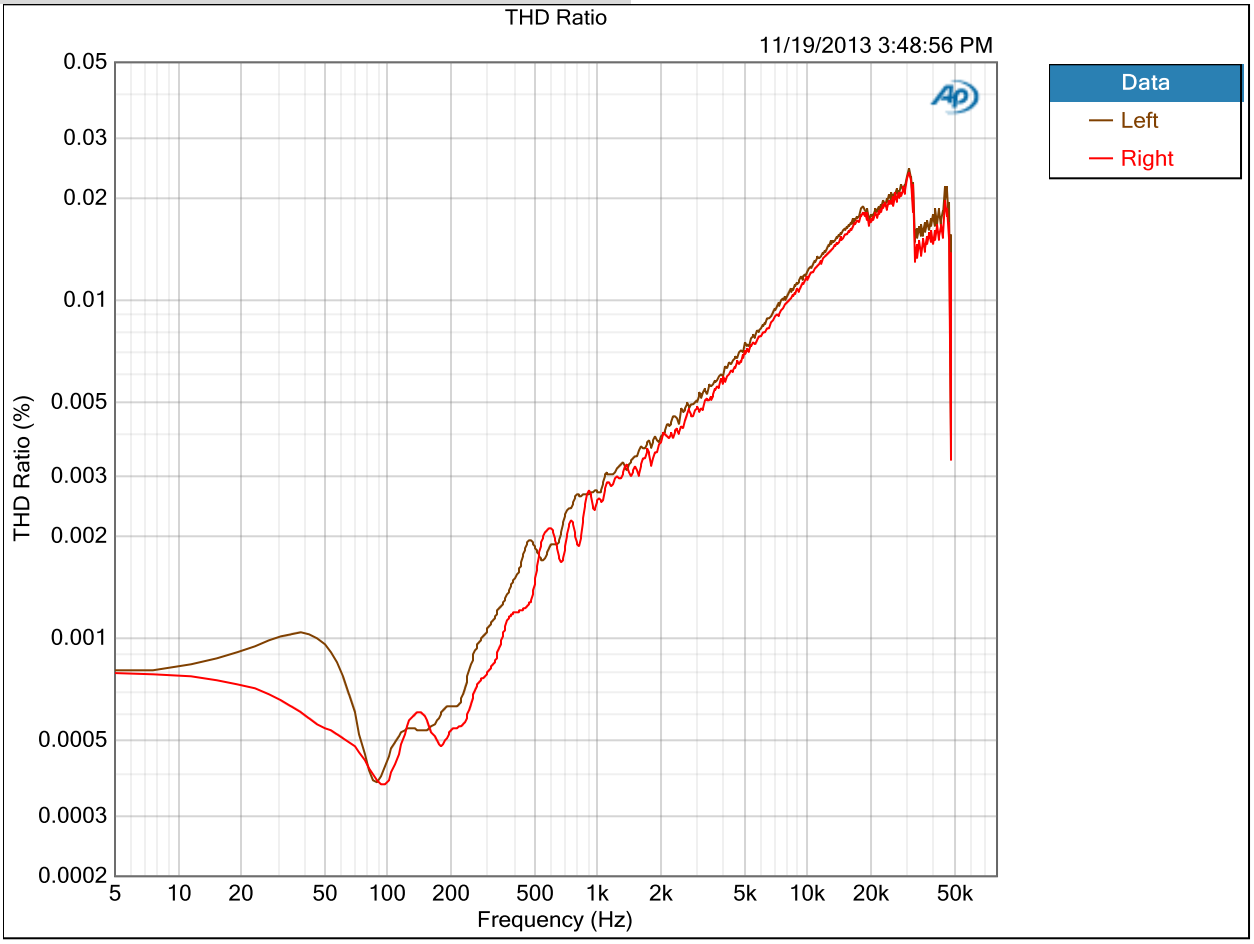
Continuous Sweep

Generator Level:	-40.000 dBV
EQ:	Relative
Start Frequency:	5.00000 Hz
Stop Frequency:	80.1000 kHz
Sweep:	1.000 s
Pre-Sweep:	1.000 s
Extend Acquisition By:	50.00 ms
Crosstalk Type:	None
Measured 1	11/19/2013 3:48:56 PM

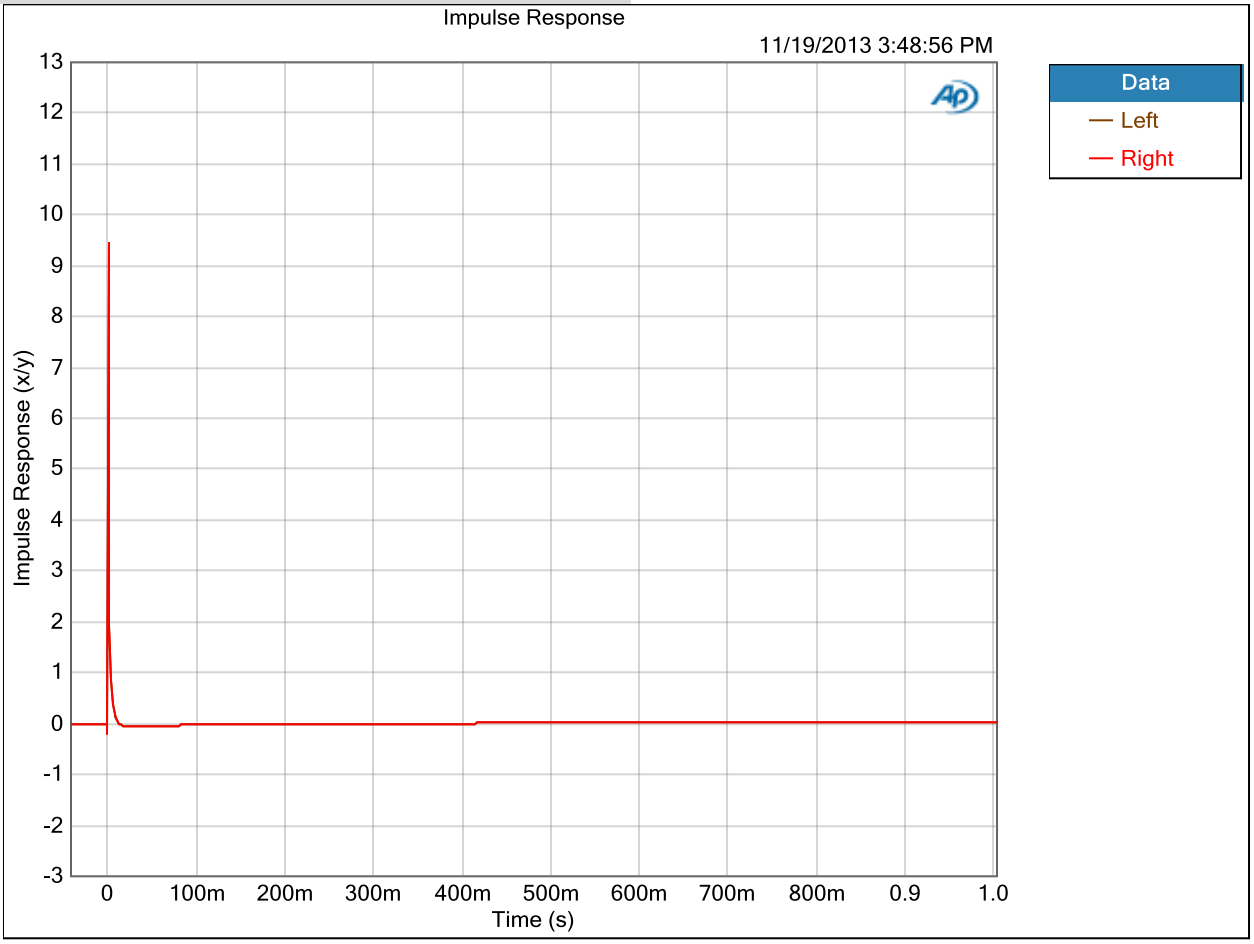
Level


Level
11/19/2013 3:48:56 PM
Data
Left
Right
+10
+9
+8
+7
+6
+5
+4
+3
+2
+1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
Level (dBV)
10
20
50
100
200
500
1k
2k
5k
10k
20k
50k
Frequency (Hz)

THD Ratio


THD Ratio
11/19/2013 3:48:56 PM
Data
Left
Right
THD Ratio (%)
0.05
0.03
0.02
0.01
0.005
0.003
0.002
0.001
0.0005
0.0003
0.0002
5
10
20
50
100
200
500
1k
2k
5k
10k
20k
50k
Frequency (Hz)

Impulse Response



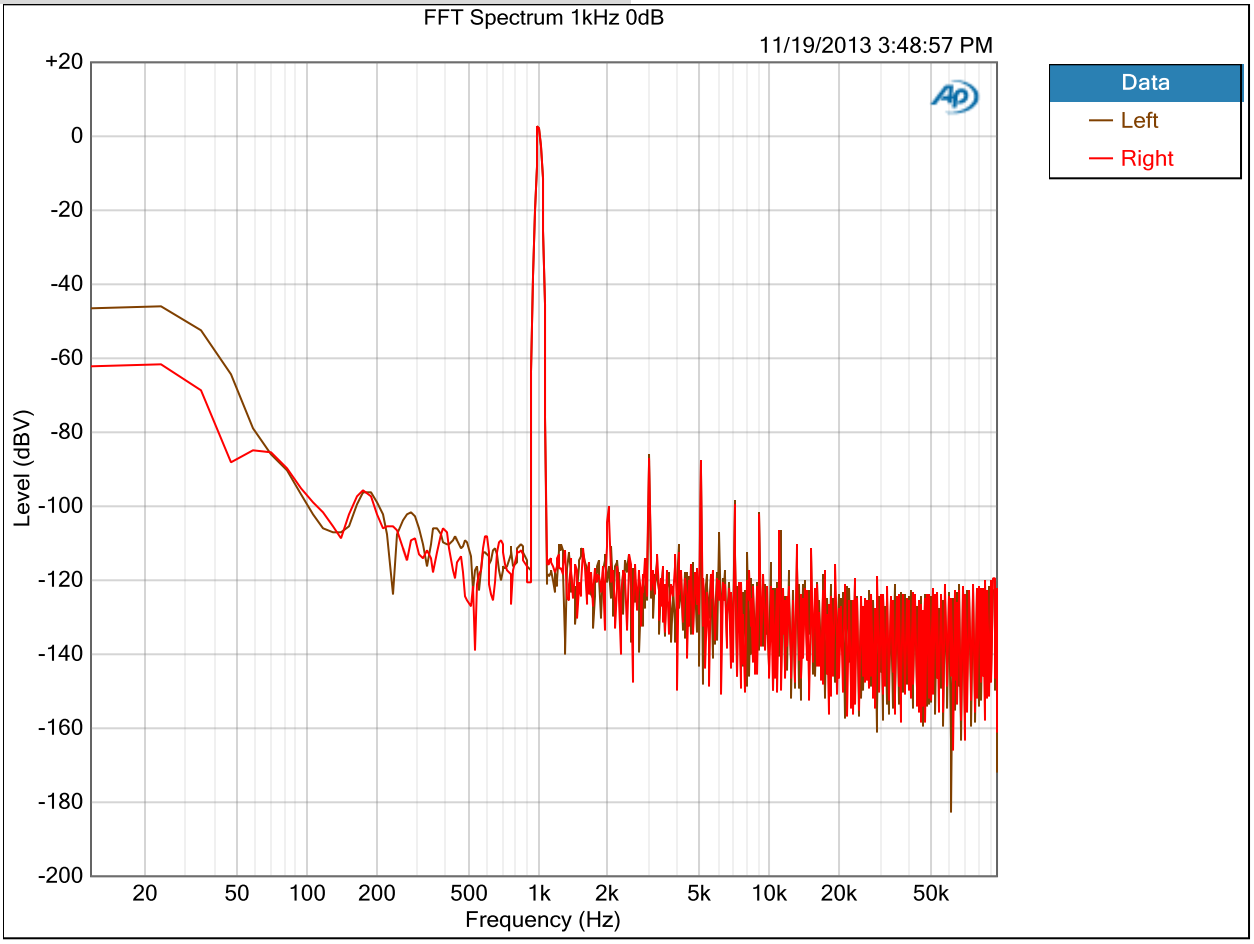
Impulse Response Parameters

Interpolated: On

Signal Analyzer

Waveform:	Sine
Generator Level:	-40.000 dBV
Frequency:	1.00000 kHz
Measured 1	11/19/2013 3:48:57 PM
Acquisition Type:	Auto
FFT Length:	16K
Averaging:	Power
Averages:	1
Trigger:	Free Run
Window:	AP-Equiripple
Delay Time:	250.0 ms
Max Input Bandwidth:	Use Signal Path

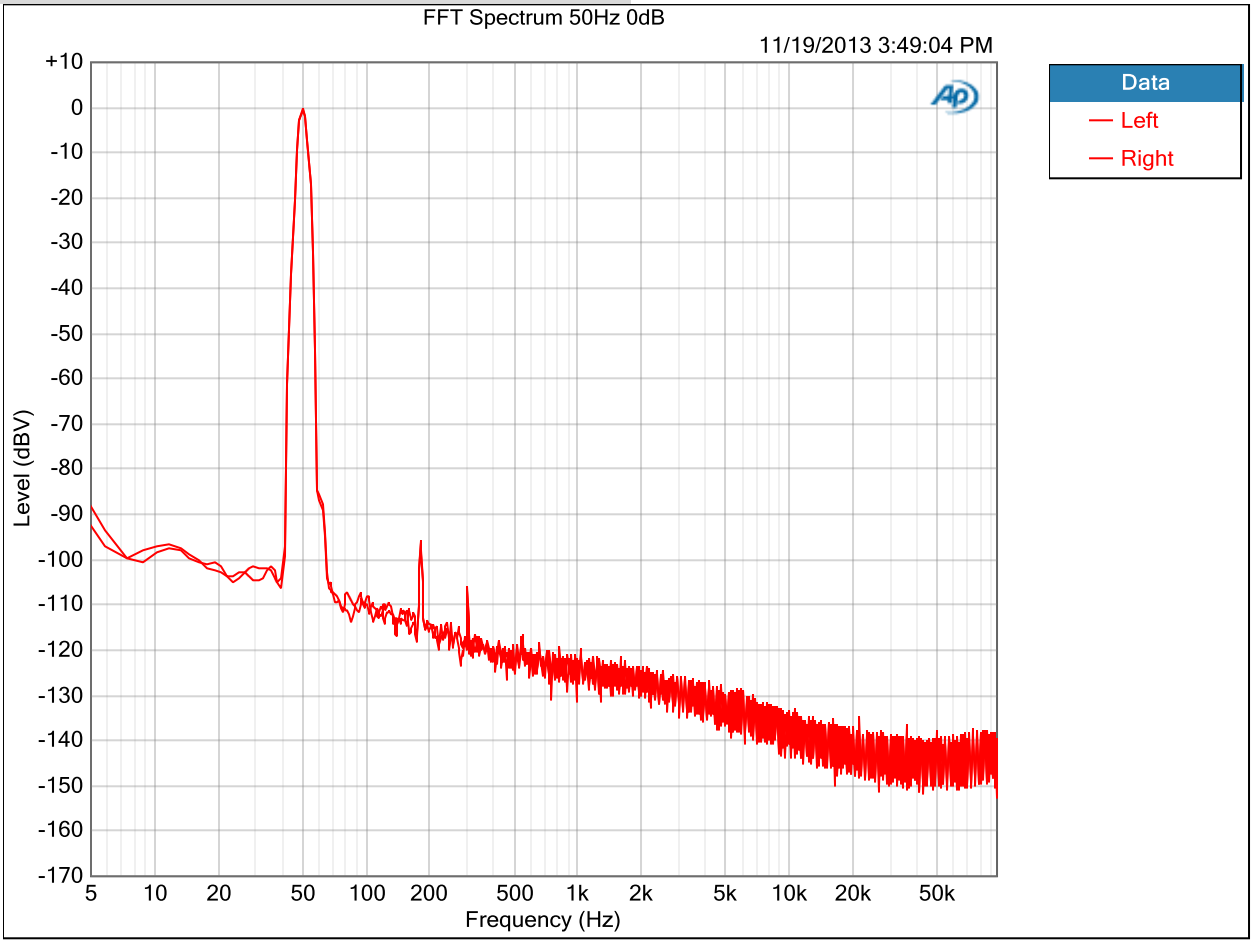
FFT Spectrum 1kHz 0dB



Signal Analyzer

Waveform:	Sine
Generator Level:	-60.000 dBV
Frequency:	50.0000 Hz
Measured 1	11/19/2013 3:49:04 PM
Acquisition Type:	Auto
FFT Length:	128K
Averaging:	Power
Averages:	8
Trigger:	Free Run
Window:	AP-Equiripple
Delay Time:	250.0 ms
Max Input Bandwidth:	Use Signal Path

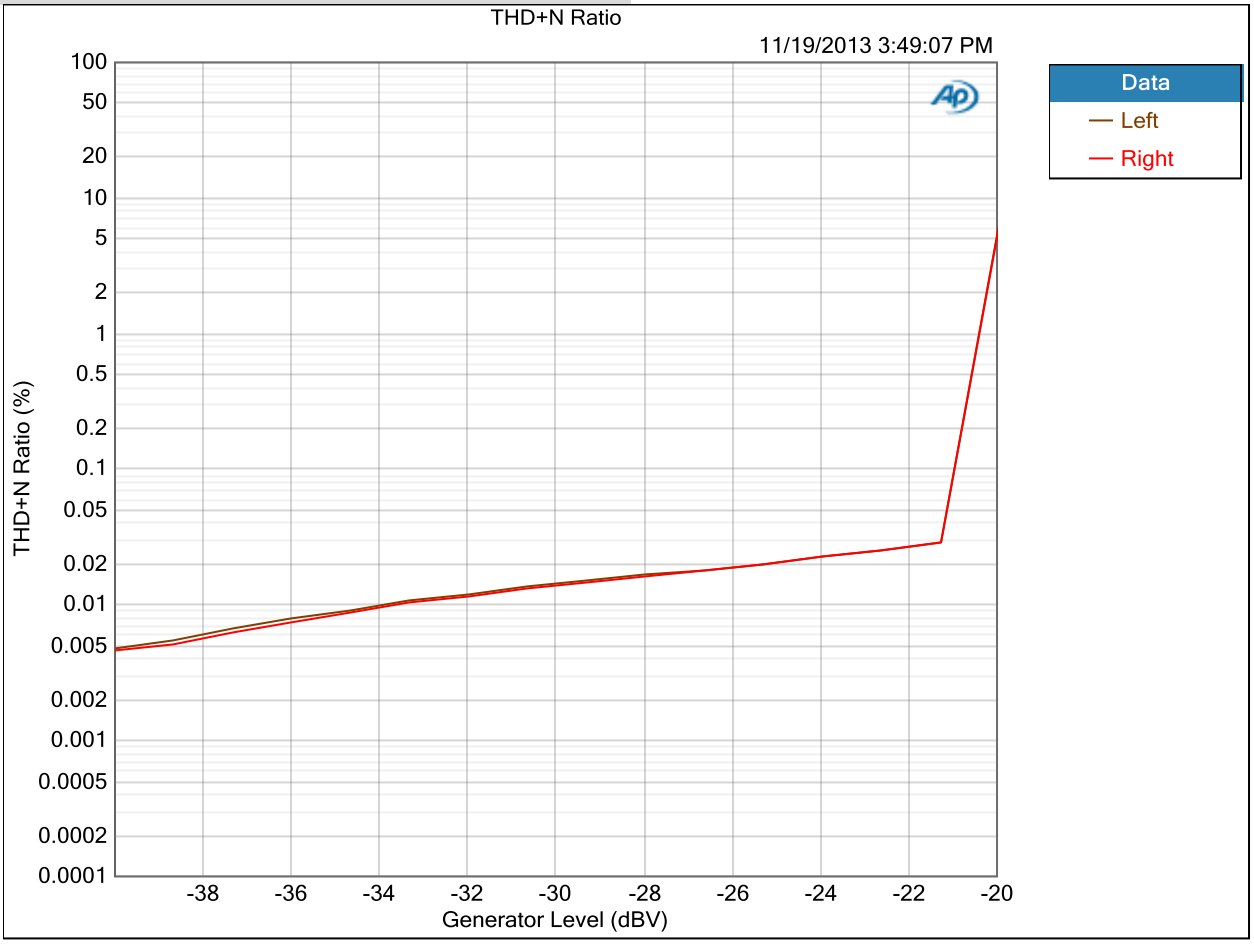
FFT Spectrum 50Hz 0dB



Input Overload

Waveform:	Sine
Generator Level:	100.0 mVrms
Frequency:	1.00000 kHz
Start Level:	-40.000 dBV
Stop Level:	-20.000 dBV
Number of Points:	16
Step Increment:	1.333 dBV
Weighting Filter:	A-wt.
Filter Tune Mode:	Measured Frequency
Measured 1	11/19/2013 3:49:07 PM

THD+N Ratio



MC Phono In Balanced Out : Setup

Output Connector:	Analog Unbalanced
Channels:	2
Source Impedance:	50 Ohm
Input Connector:	Analog Unbalanced
Channels:	2
Termination:	100 kOhm
Coupling:	AC
Max Input Bandwidth:	90 kHz
Device Delay:	0.000 s

MC Phono In Balanced Out : Reference Levels

dBr G:	0.000 dBV
dBm (Output Power):	600.0 Ohm
W(watts) (Output Power):	8.000 Ohm
Shared Frequency Reference:	1.00000 kHz
dBrA:	1.000 Vrms
dBrB:	1.000 Vrms
dBrA Offset:	0.000 dB
dBrB Offset:	0.000 dB
dBSPL1:	10.00 mVrms
dBSPL2:	10.00 mVrms
dBSPL1 Calibrator Level:	94.000 dBSPL
dBSPL2 Calibrator Level:	94.000 dBSPL
dBm (Input Power):	600.0 Ohm
W(watts) (Input Power):	8.000 Ohm

Level and Gain

Waveform:	Sine
Generator Level:	-48.000 dBV
Frequency:	10.0000 kHz

Crosstalk

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		-65.583	-55.000	dBV	✓
Right		-0.209		dBV	✓
Result:		✓	PASSED		

THD+N

Waveform:	Sine
Generator Level:	-60.000 dBV
Frequency:	1.00000 kHz
Weighting Filter:	A-wt.
Filter Tune Mode:	Measured Frequency

THD Ratio

Channel	Lower Limit	Value	Upper Limit	Unit	
Left		0.005426	0.010000	%	✓
Right		0.004400	0.010000	%	✓
Result:		✓	PASSED		

IMD (SMPTE)

IMD Type:	SMPTE
Waveform:	IMD
Generator Level:	-70.000 dBV
Frequency 1:	60.0000 Hz
Frequency 2:	7.00000 kHz
Frequency Ratio:	4:1
IMD Split:	False

SMPTE Ratio					
Channel	Lower Limit	Value	Upper Limit	Unit	
Left		0.107724	0.500000	%	✓
Right		0.105824	0.500000	%	✓
Result:		✓	PASSED		

Signal to Noise Ratio	
Waveform:	Sine
Generator Level:	-60.000 dBV
Frequency:	1.00000 kHz
Weighting Filter:	A-wt.

Signal to Noise Ratio					
Channel	Lower Limit	Value	Upper Limit	Unit	
Left	75.000	79.454		dB	✓
Right	75.000	79.431		dB	✓
Result:		✓	PASSED		

Frequency Response	
Generator Level:	-60.000 dBV
EQ:	Relative
Start Frequency:	20.0000 Hz
Stop Frequency:	20.0000 kHz
Sweep:	1.000 s
Pre-Sweep:	1.000 s
Extend Acquisition By:	50.00 ms

Deviation (20.0000 Hz - 20.0000 kHz)					
Channel	Lower Limit	Value	Upper Limit	Unit	
Left		±0.238	±0.500	dB	✓
Right		±0.167	±0.500	dB	✓
Result:		✓	PASSED		

Deviation (20.0000 Hz - 20.0000 kHz) Parameters	
Min:	20.0000 Hz
Max:	20.0000 kHz

Interchannel Phase

Waveform:	Sine
Generator Level:	-40.000 dBV
Frequency:	1.00000 kHz
Reference Channel:	Left
Meter Range:	-90 -> 270 deg

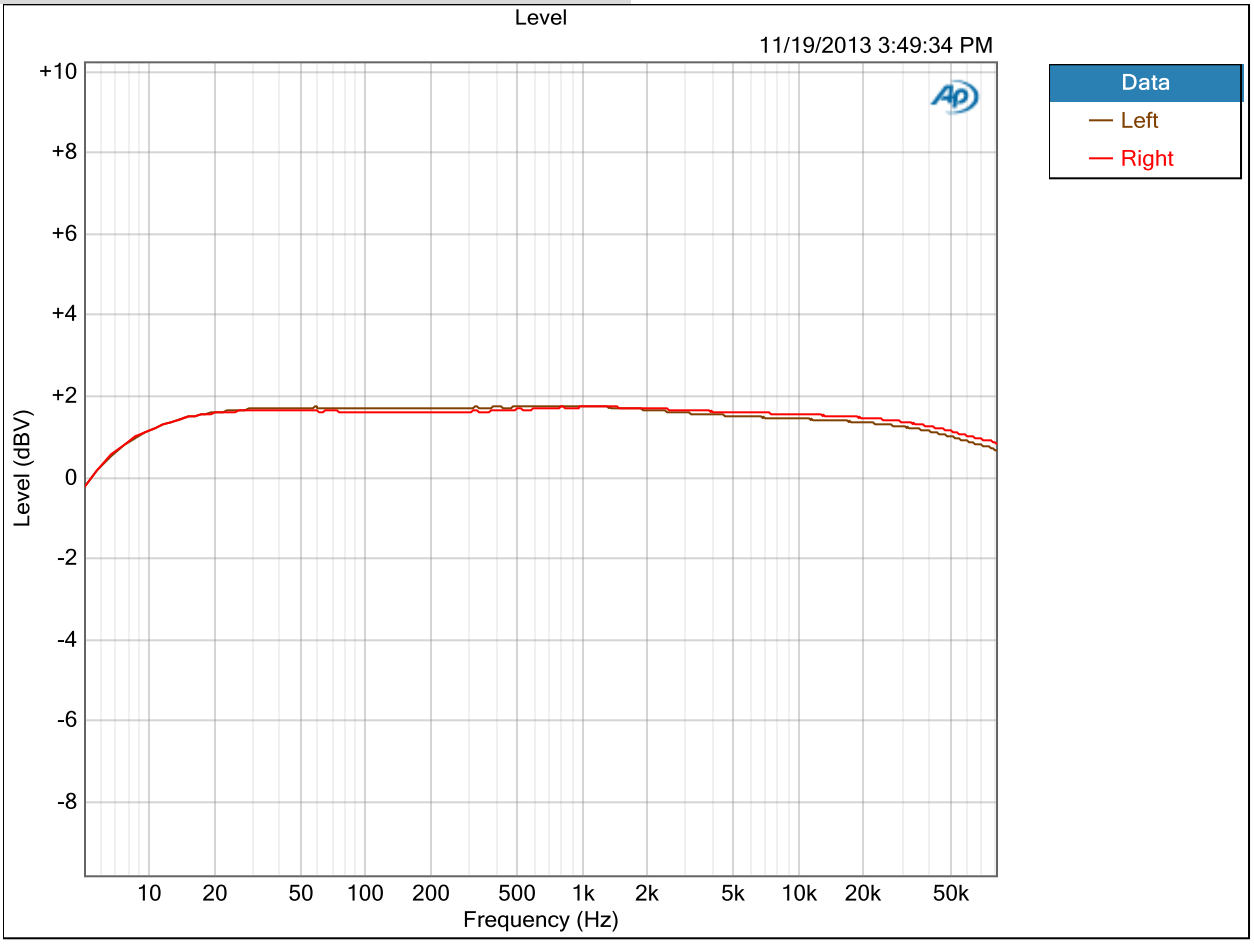
Interchannel Phase

Channel	Lower Limit	Value	Upper Limit	Unit	
Left	-1.000		1.000	deg	✓
Right	-1.000	0.615	1.000	deg	✓
Result:		✓	PASSED		

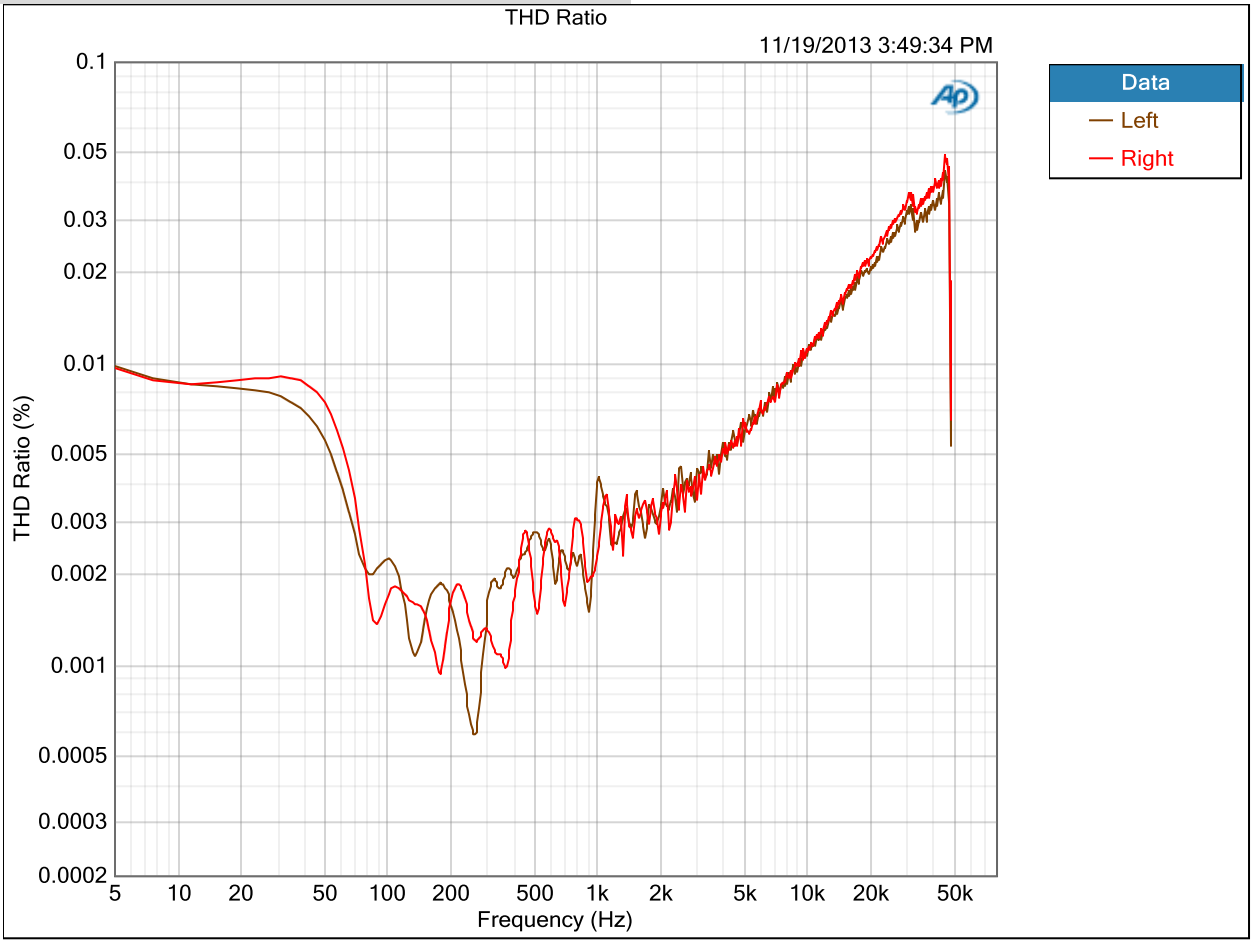
Continuous Sweep

Generator Level:	-60.000 dBV
EQ:	Relative
Start Frequency:	5.00000 Hz
Stop Frequency:	80.1000 kHz
Sweep:	1.000 s
Pre-Sweep:	1.000 s
Extend Acquisition By:	50.00 ms
Crosstalk Type:	None
Measured 1	11/19/2013 3:49:34 PM

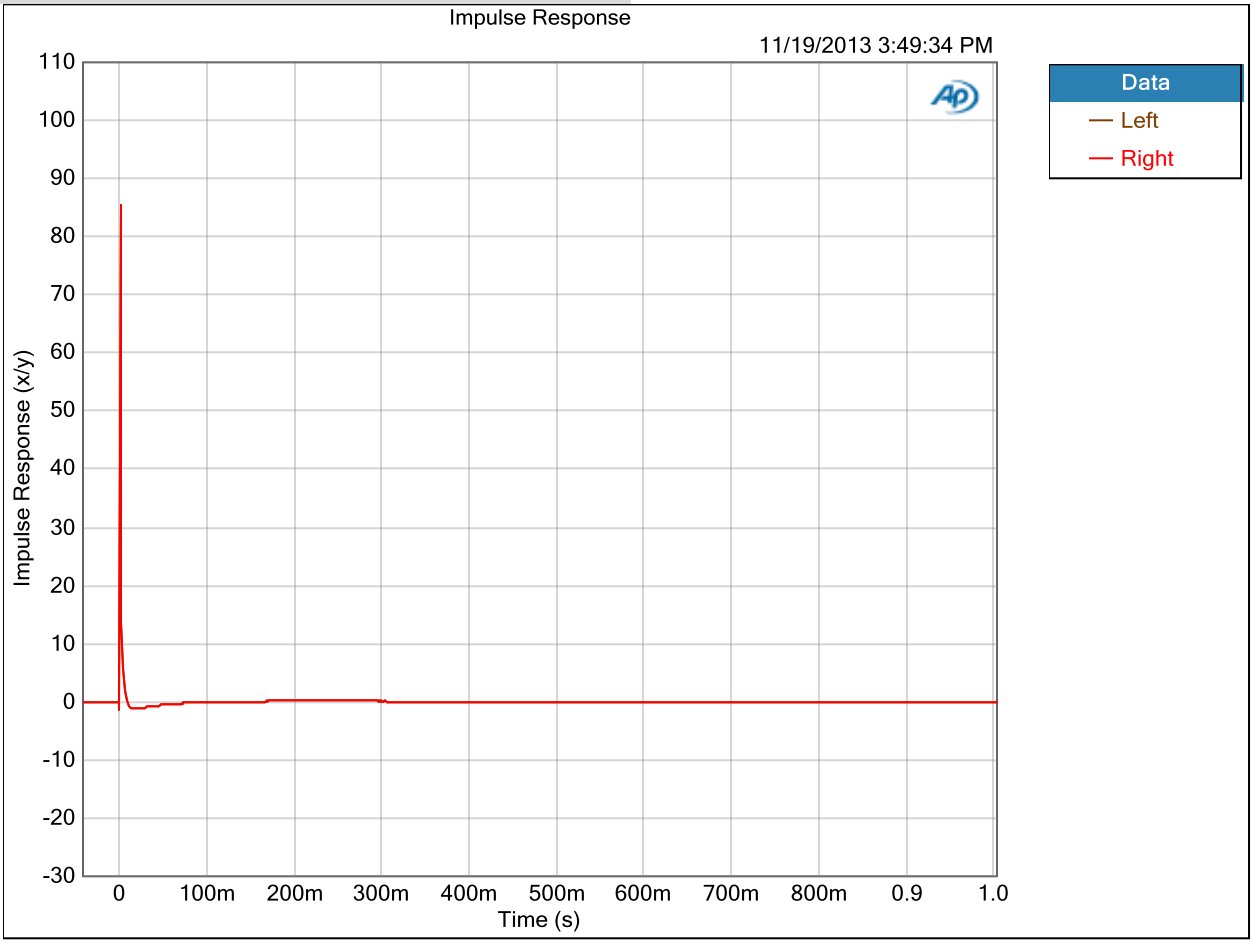
Level


Level
11/19/2013 3:49:34 PM
Data
Left
Right
+10
+8
+6
+4
+2
0
-2
-4
-6
-8
Level (dBV)
10
20
50
100
200
500
1k
2k
5k
10k
20k
50k
Frequency (Hz)

THD Ratio


THD Ratio
11/19/2013 3:49:34 PM
Data
Left
Right
THD Ratio (%)
0.1
0.05
0.03
0.02
0.01
0.005
0.003
0.002
0.001
0.0005
0.0003
0.0002
5
10
20
50
100
200
500
1k
2k
5k
10k
20k
50k
Frequency (Hz)

Impulse Response



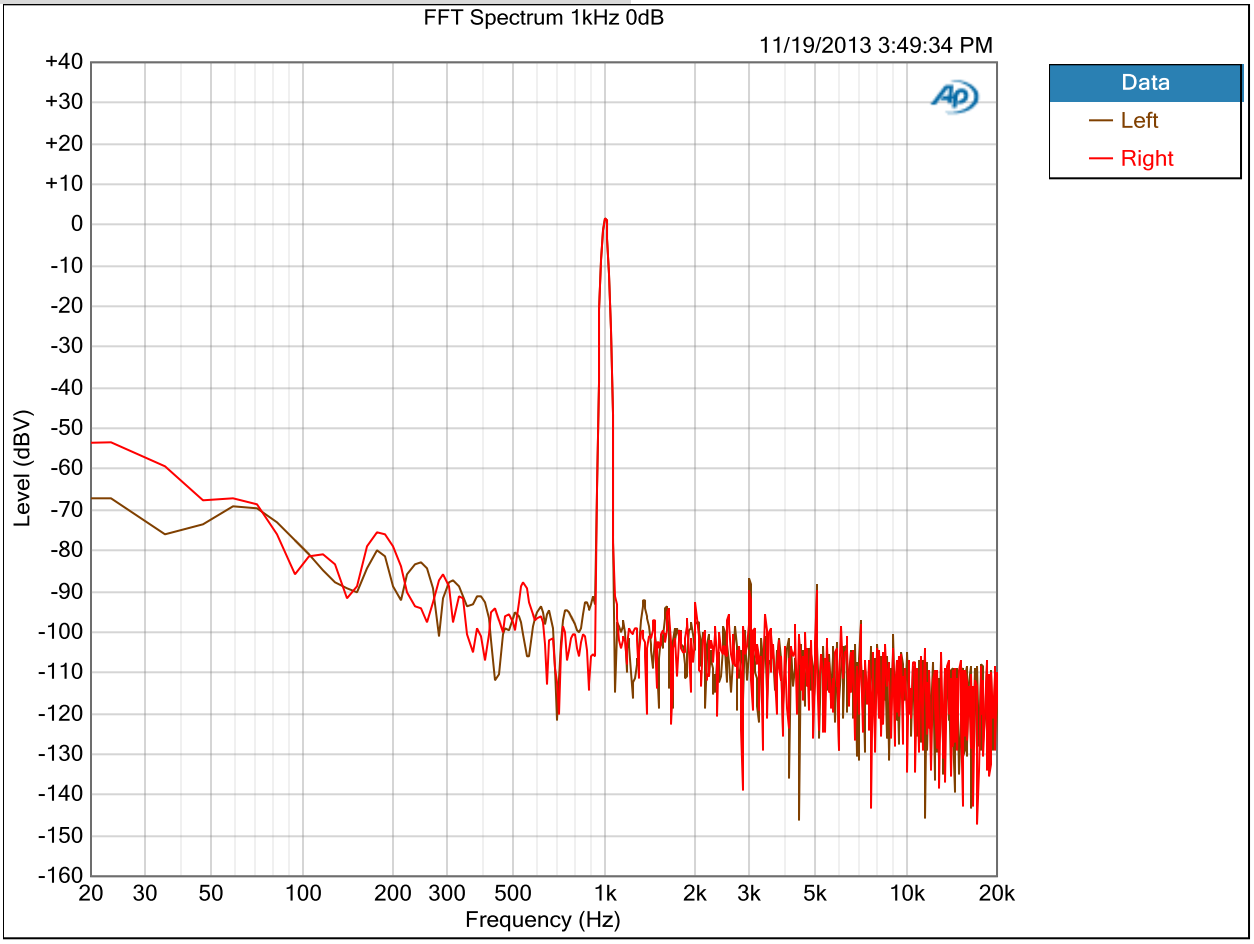
Impulse Response Parameters

Interpolated: On

Signal Analyzer

Waveform:	Sine
Generator Level:	-60.000 dBV
Frequency:	1.00000 kHz
Measured 1	11/19/2013 3:49:34 PM
Acquisition Type:	Auto
FFT Length:	16K
Averaging:	Power
Averages:	1
Trigger:	Free Run
Window:	AP-Equiripple
Delay Time:	250.0 ms
Max Input Bandwidth:	Use Signal Path

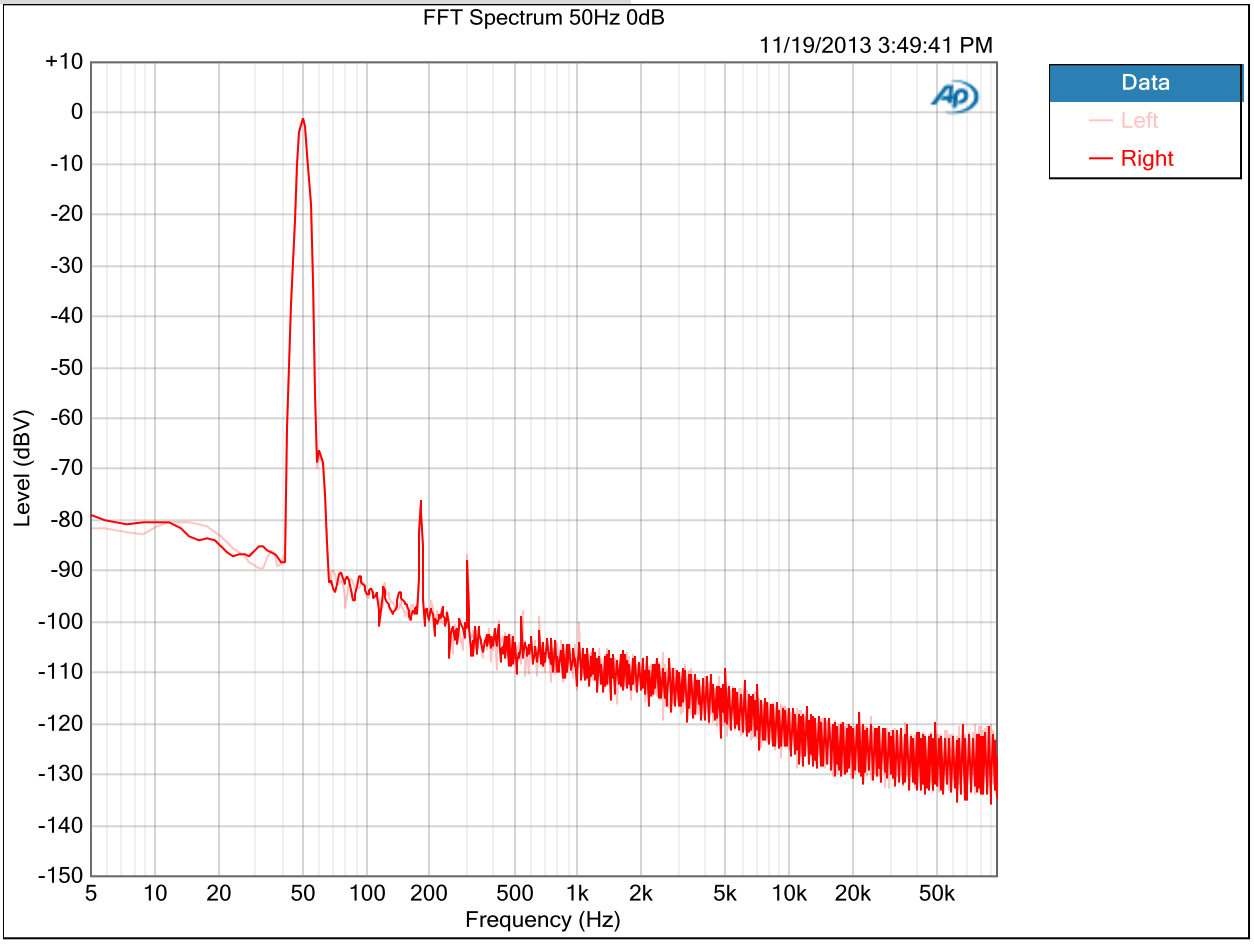
FFT Spectrum 1kHz 0dB



Signal Analyzer

Waveform:	Sine
Generator Level:	-80.000 dBV
Frequency:	50.0000 Hz
Measured 1	11/19/2013 3:49:41 PM
Acquisition Type:	Auto
FFT Length:	128K
Averaging:	Power
Averages:	8
Trigger:	Free Run
Window:	AP-Equiripple
Delay Time:	250.0 ms
Max Input Bandwidth:	Use Signal Path

FFT Spectrum 50Hz 0dB



Input Overload

Waveform:	Sine
Generator Level:	100.0 mVrms
Frequency:	1.00000 kHz
Start Level:	-60.000 dBV
Stop Level:	-40.000 dBV
Number of Points:	17
Step Increment:	1.250 dBV
Low-pass Filter:	20 kHz
High-pass Filter:	20 Hz
Filter Tune Mode:	Measured Frequency
Measured 1	11/19/2013 3:49:57 PM

THD+N Ratio