

SW51+ Westinghouse 6EJ7 300R DISTORTION UNBAL REPORT

Overall Result: **PASS**

SUMMARY:	RESULT
A01 Tube Freq Resp 5Hz - 96KHz 0dBu	OK
A04 THD+N,THD, nth-HD 2 3 4 - THD+N minus 2nd and 3rd harmonics	✓
A07 Noise, SNR	✓
A16 FFT residual noise	✓
A17 Tube THD+N and 4+HD+N vs Ampl +10dBu start unBal	OK
A18 - gain linearity 4+HD+N - unBal output - 440Hz	OK
A19 - gain linearity 4+HD+N - unBal output - 40Hz	OK
A20_MT_Analogue_31Tones	OK

KEY: ✓ = Test passes, ✗ = Test fails, OK = Test has run but has no limit checking, (X) = Test has failed to run or has not completed, [N] = Test passes but is not required, [X] = Test fails but is not required, ? = Test is required but has not been run.
 - = Test is not required.

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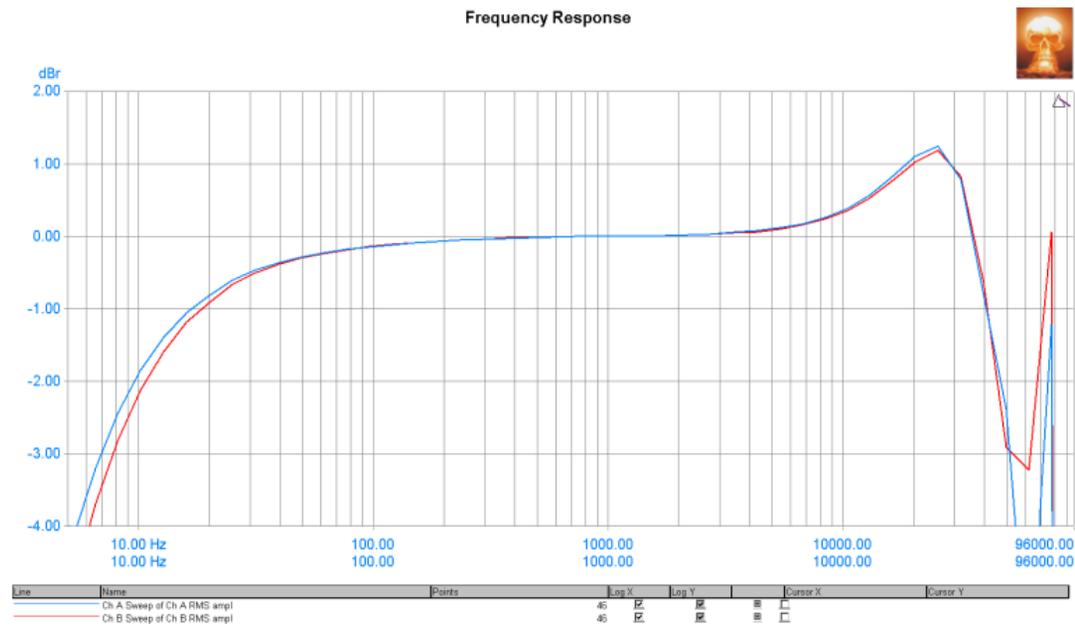
A01 Tube Freq Resp 5Hz - 96KHz 0dBu: Not limit checked.

Measured at 10/30/2020 6:37:26 PM

Signal Analyzer Readings		
RMS amplitude (Channel A)	-0.102 dBu	Not limit checked.
RMS amplitude (Channel B)	0.104 dBu	Not limit checked.

CTA Readings		
Gain (Channel A RMS)	-0.103 dB	Not limit checked.
Gain (Channel B RMS)	0.103 dB	Not limit checked.

Settings: Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency



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A04 THD+N,THD, nth-HD 2 3 4 - THD+N minus 2nd and 3rd harmonics: **PASSED**

Measured at 10/30/2020 6:37:45 PM

Signal Analyzer Readings		
RMS amplitude (Channel A)	-0.101 dBu	Not limit checked.
RMS amplitude (Channel B)	0.106 dBu	Not limit checked.

CTA Readings

THD+N - relative (Channel A RMS)

0.67282 %

< 200 %

> 0 %

THD+N - relative (Channel B RMS)

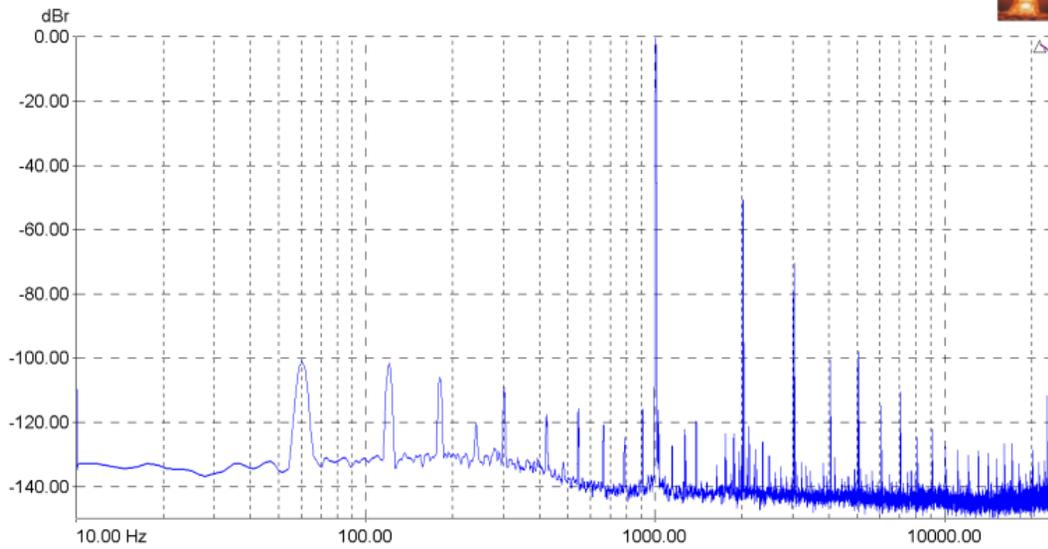
0.56962 %

< 200 %

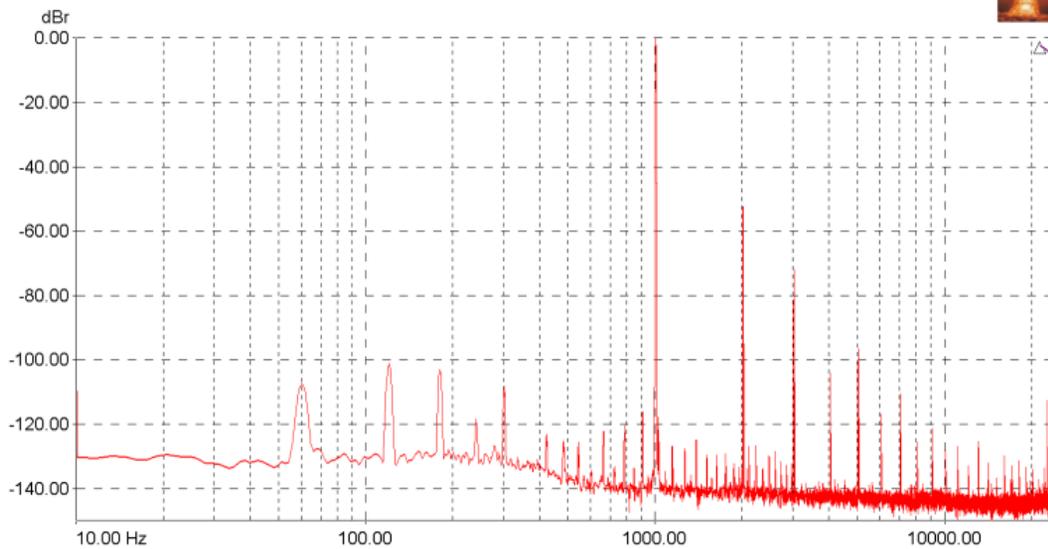
> 0 %

Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the input frequency

Distortion 1 KHz



Distortion 1 KHz



FFT Detector Readings		
THD (Channel A)	0.72075 %	< 200 % > 0 %
THD (Channel B)	0.61049 %	< 200 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filters from the 2nd to 10th harmonics		
2nd Harmonic Distortion (Channel A)	0.71962 %	< 200 % > 0 %
2nd Harmonic Distortion (Channel B)	0.60985 %	< 200 % > 0 %
FFTD 2 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 2nd harmonic		
3rd Harmonic Distortion (Channel A)	0.04034 %	< 200 % > 0 %
3rd Harmonic Distortion (Channel B)	0.02800 %	< 200 % > 0 %
FFTD 3 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 3rd harmonic		
4th Harmonic Distortion (Channel A)	0.00155 %	Not limit checked.
4th Harmonic Distortion (Channel B)	0.00090 %	Not limit checked.
FFTD 4 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 4th harmonic		
5th Harmonic Distortion (Channel A)	0.00149 %	Not limit checked.
5th Harmonic Distortion (Channel B)	0.00137 %	Not limit checked.
FFTD 5 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 5th harmonic		
4+HD + N (Channel A)	0.00260 %	< 0.05 % > 0 %
4+HD + N (Channel B)	0.00203 %	< 0.05 % > 0 %
FFTD 6 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 3rd harmonic		
Hum (Channel A)	0.00100 %	< 0.017783 % > 0 %
Hum (Channel B)	0.00044 %	< 0.017783 % > 0 %
FFTD 7 Settings: Self relative, 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-pass filter at 60 Hz		
Noise (residual) (Channel A)	0.00142 %	< 0.017783 % > 0 %
Noise (residual) (Channel B)	0.00117 %	< 0.017783 % > 0 %
FFTD 8 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 10th harmonic		

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A07 Noise, SNR: PASSED

Measured at 10/30/2020 6:38:48 PM

CTA Readings		
Amplitude (Channel A RMS)	-42.079 dBu	Not limit checked.
Amplitude (Channel B RMS)	-41.878 dBu	Not limit checked.
Settings: 22 Hz - 22 kHz, unweighted RMS		

FFT Detector Readings		
Noise (unweighted) (Channel A)	-105.926 dBr	< 200 dBr > -200 dBr
Noise (unweighted) (Channel B)	-108.447 dBr	< 200 dBr > -200 dBr
FFTD 1 Settings: 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-reject filter at the generator frequency		
SNR (Channel A)	-106.007 dBr	< 200 dBr > -200 dBr
SNR (Channel B)	-108.549 dBr	< 200 dBr > -200 dBr
FFTD 2 Settings: 22 Hz - 22 kHz, unweighted with 1/3rd octave band-reject filter at the generator frequency		

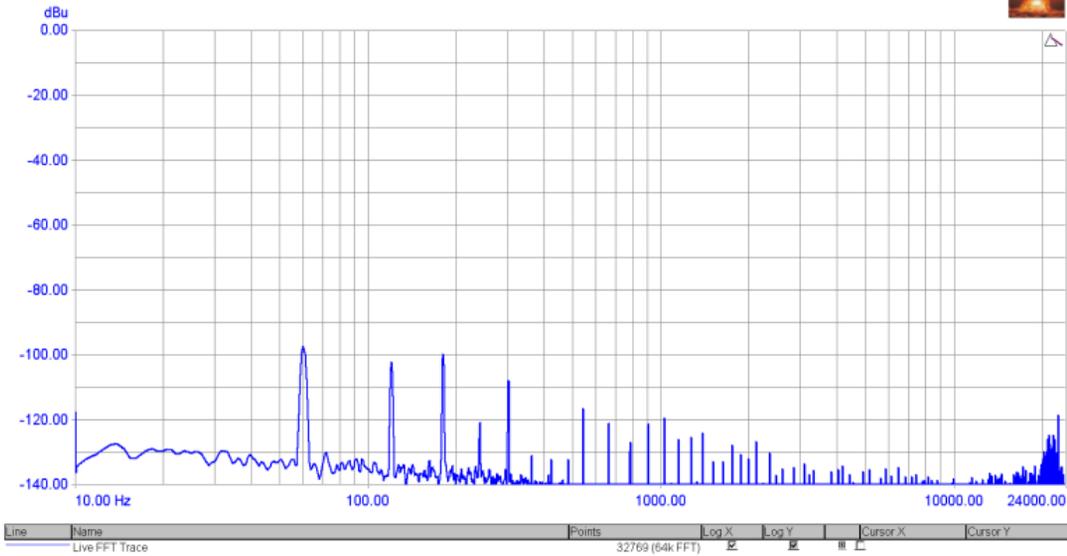
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A16 FFT residual noise: PASSED

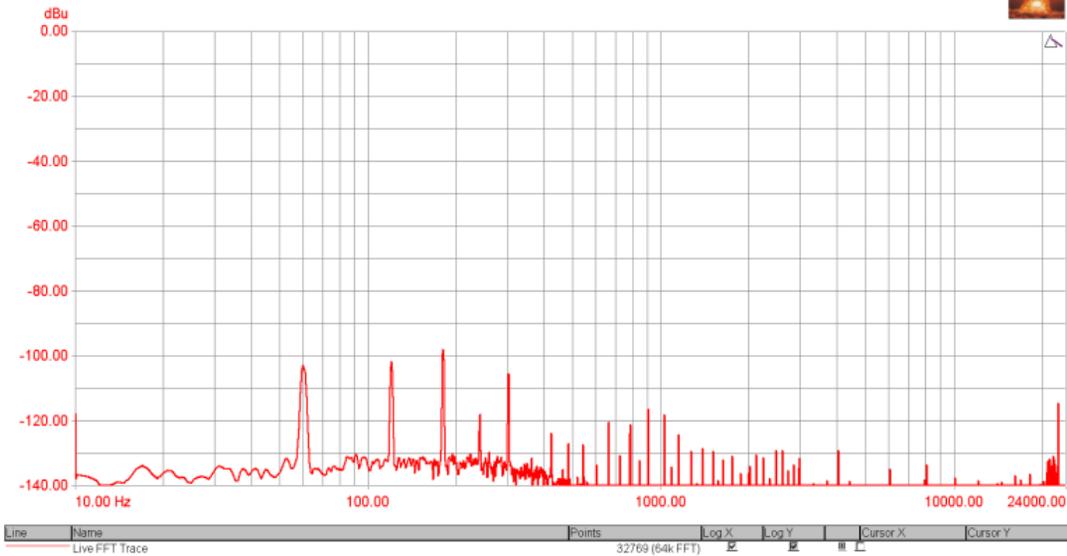
Measured at 10/30/2020 6:38:50 PM

Signal Analyzer Readings		
RMS amplitude (Channel A)	-87.990 dBu	Not limit checked.
RMS amplitude (Channel B)	-90.177 dBu	Not limit checked.

FFT residual noise



FFT residual noise



FFT Detector Readings		
Noise (residual) (Channel A)	-93.960 dBu	< -80 dBu > -140 dBu
Noise (residual) (Channel B)	-98.808 dBu	< -80 dBu > -140 dBu
FFTD 1 Settings: 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 10th harmonic		

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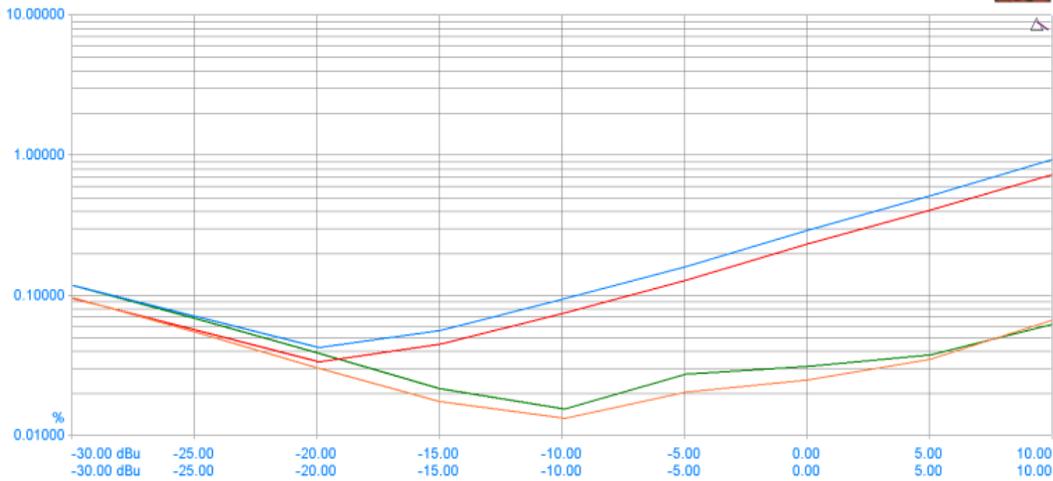
A17 Tube THD+N and 4+HD+N vs Ampl +10dBu start unBal: Not limit checked.

Measured at 10/30/2020 6:40:12 PM

CTA Readings		
Amplitude (Channel A RMS)	-0.086 dBu	Not limit checked.
Amplitude (Channel B RMS)	0.119 dBu	Not limit checked.
Settings: 22 Hz - 22 kHz, unweighted RMS		

FFT Detector Readings		
THD+N - relative (Channel A)	0.625 %	Not limit checked.
THD+N - relative (Channel B)	0.541 %	Not limit checked.
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with 1/3rd octave band-reject filter at the input frequency		
4+HD+N	0.050 %	Not limit checked.
4+HD+N	0.029 %	Not limit checked.
FFTD 2 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 2nd harmonic		

THD+N and 4+HD+N vs Amplitude



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y
1	Ch A Sweep of FFT Det 1 : THD+N - relative : Ch A	9	☑	☑	☑	☑
2	Ch A Sweep of FFT Det 2 : THD : Ch A	9	☑	☑	☑	☑
3	Ch B Sweep of FFT Det 1 : THD+N - relative : Ch B	9	☑	☑	☑	☑

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A18 - gain linearity 4+HD+N - unBal output - 440Hz: Not limit checked.

Measured at 10/30/2020 6:41:04 PM

Signal Analyzer Readings	
Frequency (Channel A)	440.000 Hz Not limit checked.

CTA Readings	
Gain (Channel A RMS)	-0.103 dB Not limit checked.
Gain (Channel B RMS)	0.104 dB Not limit checked.

Settings: Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency

Gain Linearity and 4+HD+N vs Amplitude - 440 Hz



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y	Comment/Label
1	Ch A Sweep of CT Det : Gain : Ch A	41	☑	☑	☑	☑	
2	Ch A Sweep of FFT Det 1 : THD+N - relative : Ch A	41	☑	☑	☑	☑	
3	Ch B Sweep of FFT Det 1 : THD+N - relative : Ch B	41	☑	☑	☑	☑	

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A19 - gain linearity 4+HD+N - unBal output - 40Hz: Not limit checked.

Measured at 10/30/2020 6:42:24 PM

Signal Analyzer Readings	
Frequency (Channel A)	40.000 Hz Not limit checked.

CTA Readings

Gain (Channel A RMS)

-0.573 dB

Not limit checked.

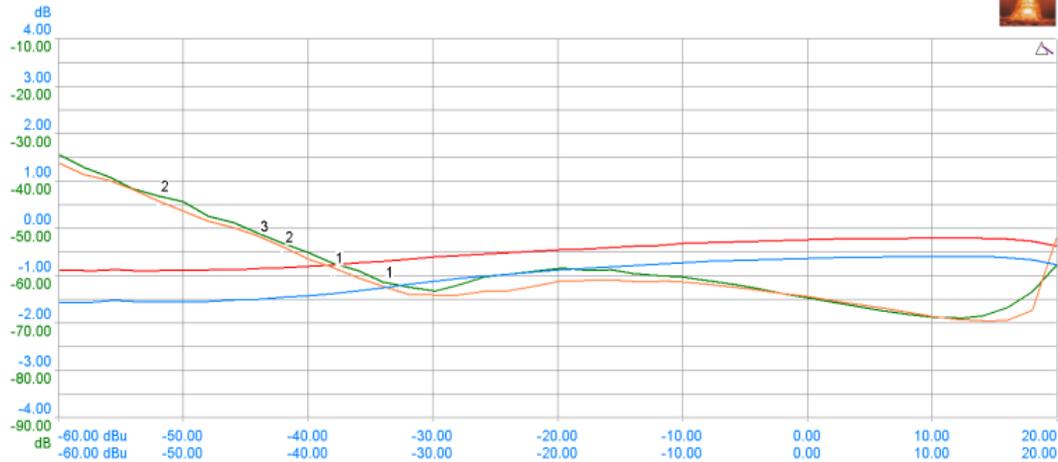
Gain (Channel B RMS)

-0.402 dB

Not limit checked.

Settings: Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency

Gain Linearity and 4+HD+N vs Amplitude - 40 Hz



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y	Comment/Label
1	Ch A Sweep of CT Det : Gain : Ch A	41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Ch A Sweep of FFT Det 1 : THD+N - relative : Ch A	41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1: Sweep timed out 2: Sweep timed out
3	Ch B Sweep of CT Det : Gain : Ch B	41	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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A20_MT_Analogue_31Tones: Not limit checked.

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Signal Analyzer Readings

RMS amplitude (Channel A)

-20.108 dBu

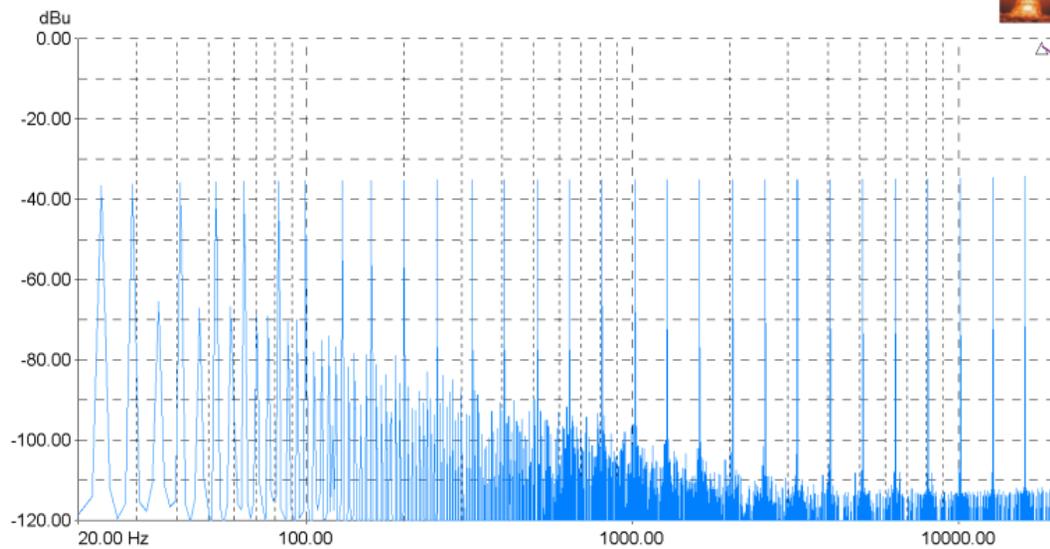
Not limit checked.

RMS amplitude (Channel B)

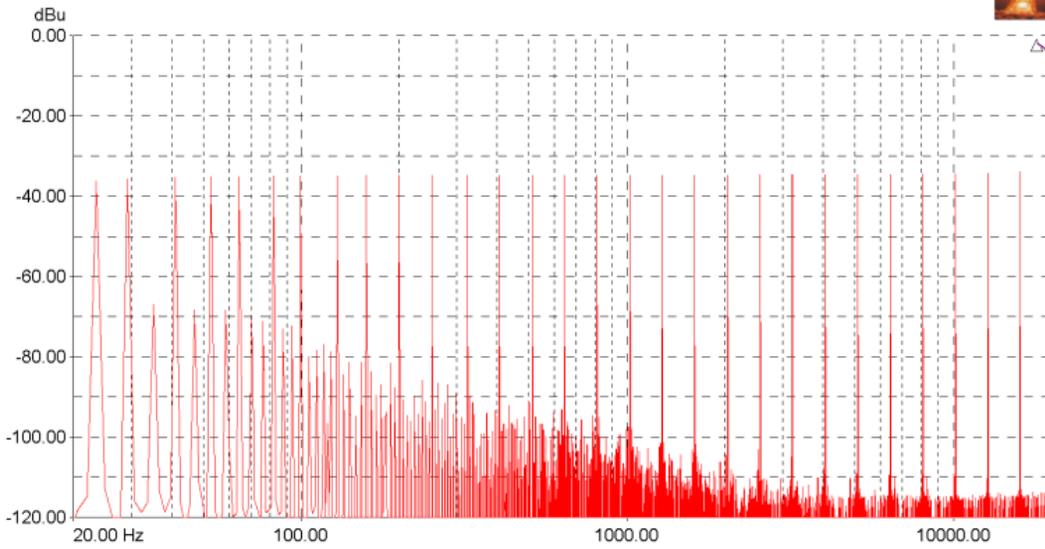
-20.679 dBu

Not limit checked.

Multitone 31 tones 64K FFT



Multitone 31 tones 64K FFT



FFT Detector Readings		
User: TD (Channel A)	103.428 dB	Not limit checked.
User: TD (Channel B)	107.305 dB	Not limit checked.
FFTD 1 Settings: User: TD		
User: Noise (Channel A)	-83.392 dBu	Not limit checked.
User: Noise (Channel B)	-84.231 dBu	Not limit checked.
FFTD 2 Settings: User: Noise		
User: TD+N (Channel A)	103.428 dB	Not limit checked.
User: TD+N (Channel B)	107.305 dB	Not limit checked.
FFTD 3 Settings: User: TD+N		
User: LF Rolloff (Channel A)	-13.903 dB	Not limit checked.
User: LF Rolloff (Channel B)	-11.131 dB	Not limit checked.
FFTD 4 Settings: User: LF Rolloff		
User: HF Rolloff (Channel A)	-2.249 dB	Not limit checked.
User: HF Rolloff (Channel B)	0.556 dB	Not limit checked.
FFTD 5 Settings: User: HF Rolloff		