

ECP Audio T4 Mullard CV4024 Amp Std TESTS REPORT

Overall Result: **PASS**

SUMMARY:	RESULT
A01 Ampl, Phase, Gain	✓
A02 Ampl, Phase vs Freq	✓
A03 Gain vs Ampl	✓
A04 THD+N,THD, nth-HD 2 3 4 - THD+N minus 2nd and 3rd harmonics	✓
A05 THD+N vs Freq	✓
A06 THD+N vs Ampl	✓
A07 Noise, SNR	✓
A08 Crosstalk A to B	✓
A09 Crosstalk B to A	✓
A10 Crosstalk A to B vs Freq	✓
A11 Crosstalk B to A vs Freq	✓
A12 FFT 1000 Hz THD+N	✓
A13 FFT 50+7000Hz	✓
A14 FFT 600+1700 Hz	✓
A15 FFT 19+20 KHz	✓
A16 FFT residual noise	✓

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

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A01 Ampl, Phase, Gain: PASSED

Measured at 7/20/2019 3:07:44 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

Signal Analyzer Readings		
RMS amplitude (Channel A)	-0.036 dBu	< 3 dBu > -3 dBu
RMS amplitude (Channel B)	0.022 dBu	< 3 dBu > -3 dBu
Inter-channel phase	0.00 °	< 10 ° > -10 °

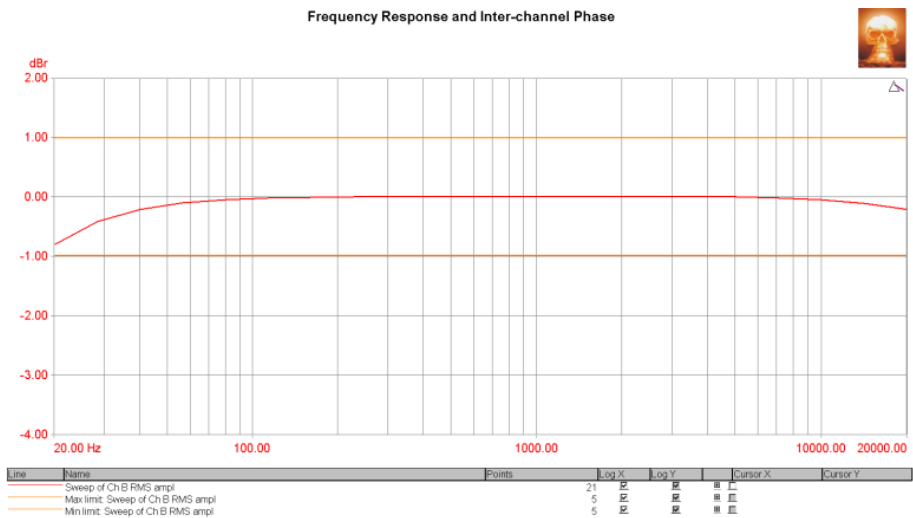
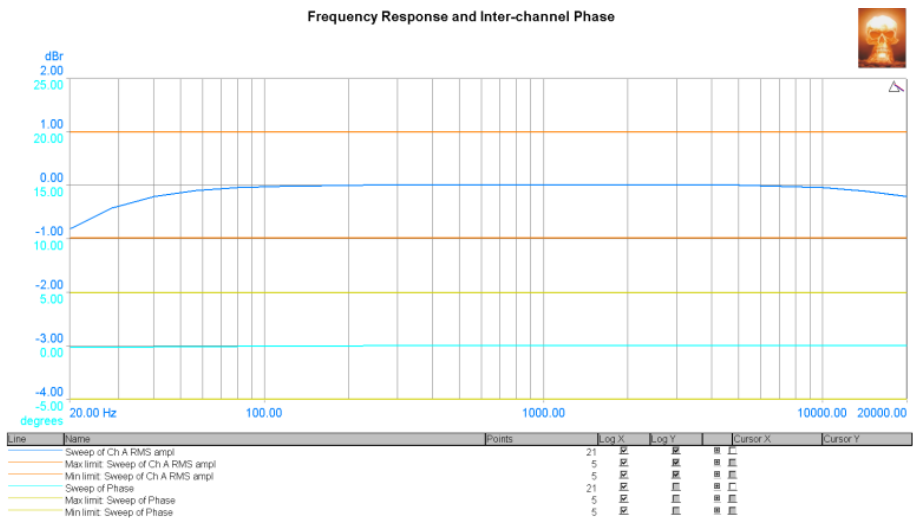
CTA Readings		
Gain (Channel A RMS)	-0.037 dB	< 3 dB > -3 dB
Gain (Channel B RMS)	0.021 dB	< 3 dB > -3 dB
Settings: Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency		

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A02 Ampl, Phase vs Freq: PASSED

Measured at 7/20/2019 3:07:50 PM

Generator Settings	
Channel A:	sine, -3 dBFS at 1000 Hz
Channel B:	sine, -3 dBFS at 1000 Hz

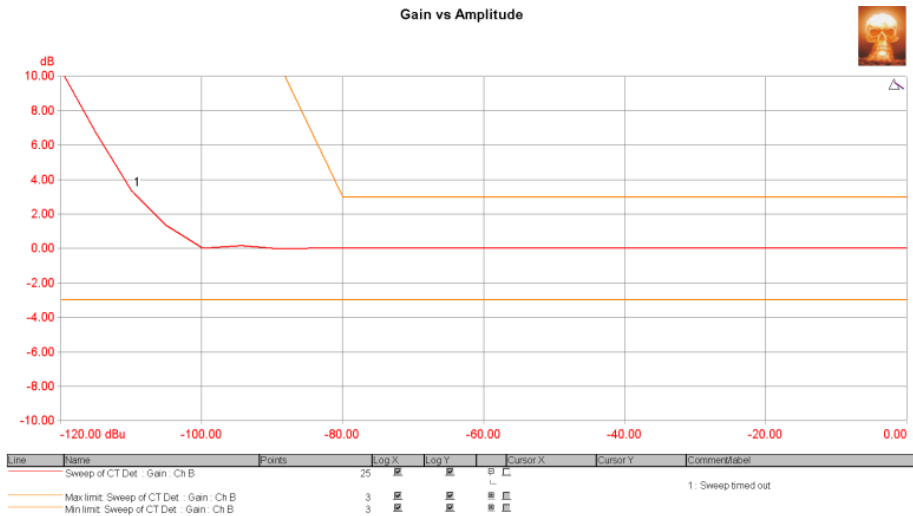
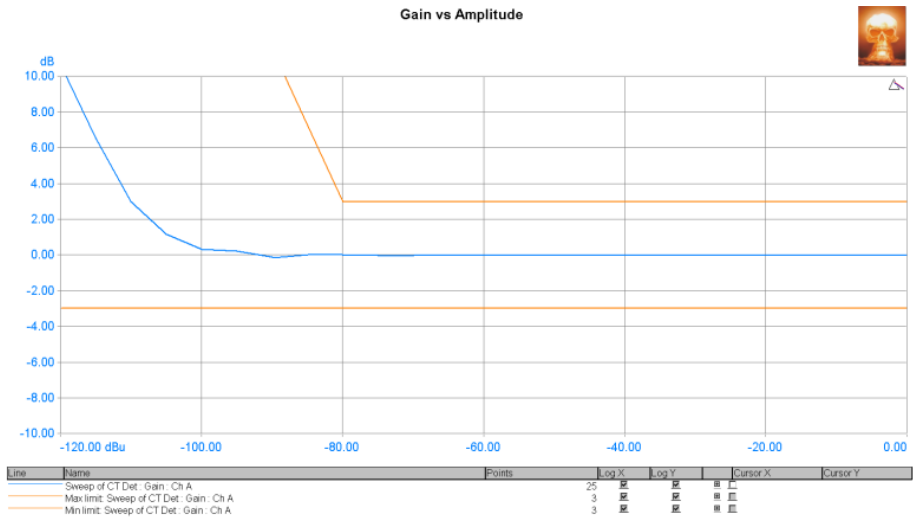


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A03 Gain vs Ampl: PASSED

Measured at 7/20/2019 3:07:56 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz



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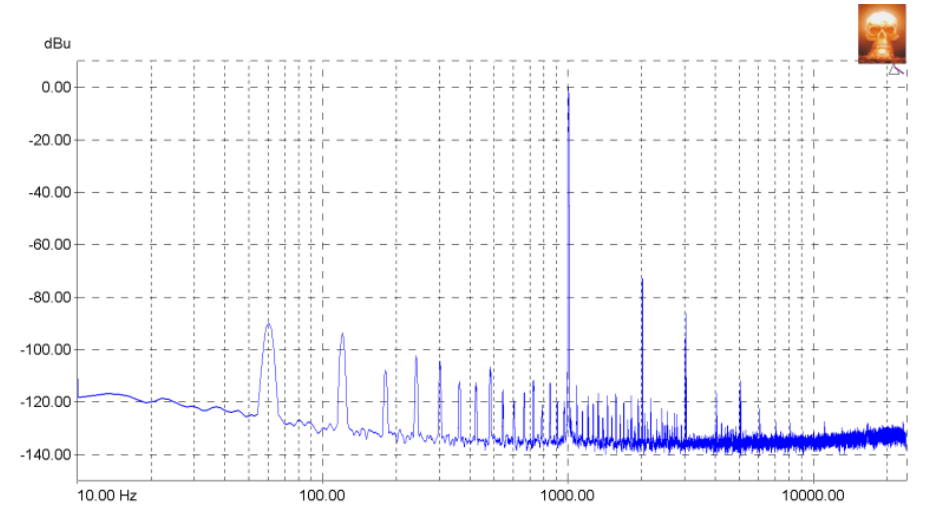
A04 THD+N,THD, nth-HD 2 3 4 - THD+N minus 2nd and 3rd harmonics: PASSED

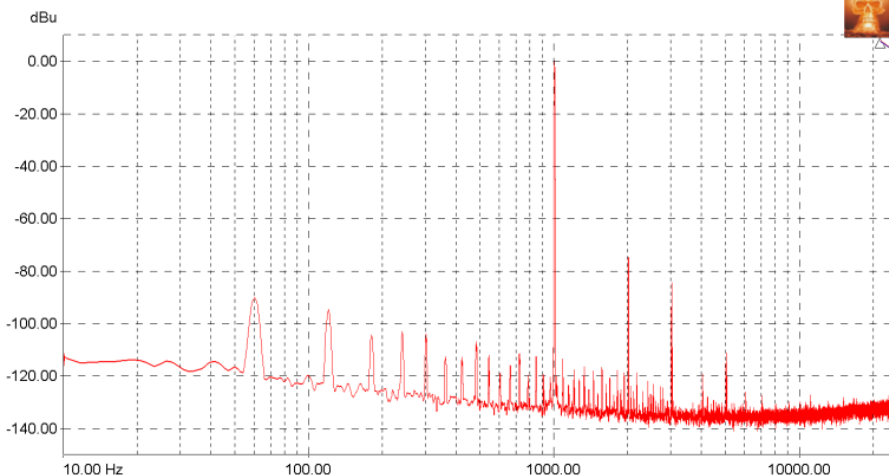
Measured at 7/20/2019 3:08:07 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

Signal Analyzer Readings		
RMS amplitude (Channel A)	-0.037 dBu	Not limit checked.
RMS amplitude (Channel B)	0.021 dBu	Not limit checked.

CTA Readings		
THD+N - relative (Channel A RMS)	0.02218 %	< 200 % > 0 %
THD+N - relative (Channel B RMS)	0.01829 %	< 200 % > 0 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the input frequency		





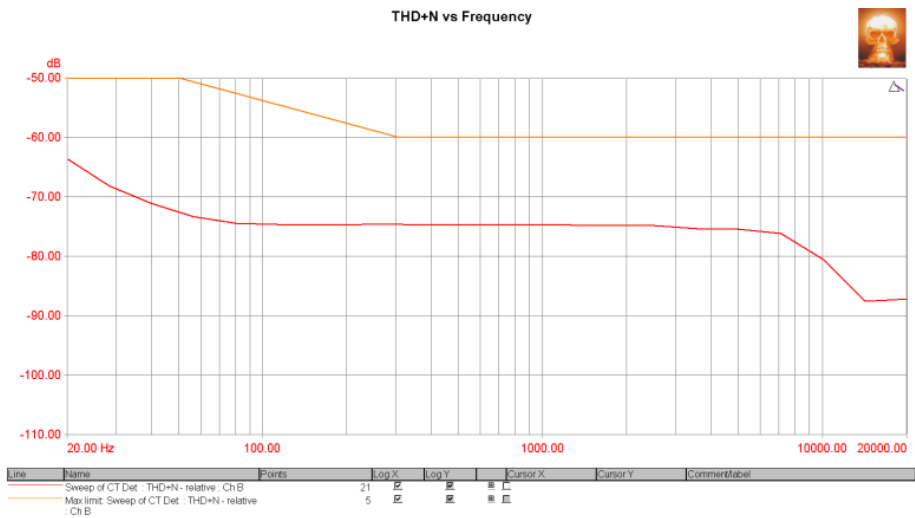
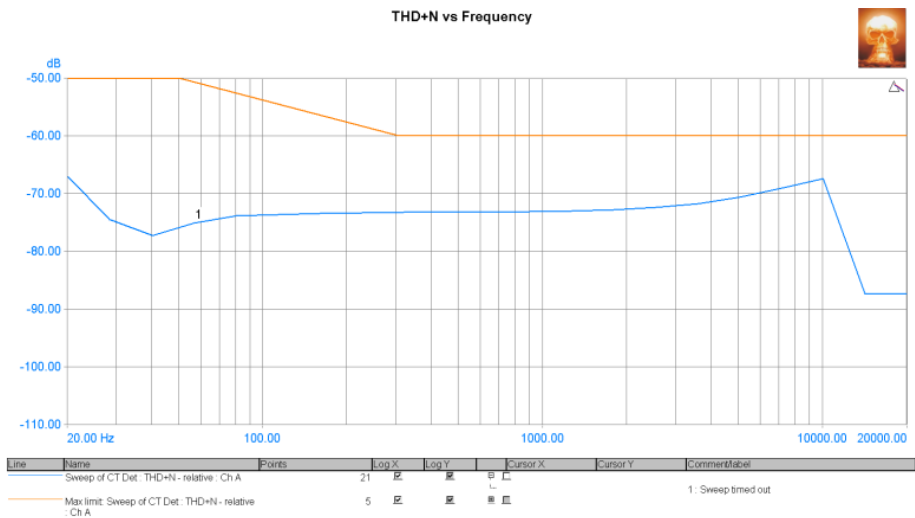
FFT Detector Readings		
THD (Channel A)	0.02320 %	< 200 % > 0 %
THD (Channel B)	0.01907 %	< 200 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filters from the 2nd to 10th harmonics		
2nd Harmonic Distortion (Channel A)	0.02272 %	< 200 % > 0 %
2nd Harmonic Distortion (Channel B)	0.01815 %	< 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)	0.00471 %	< 200 % > 0 %
3rd Harmonic Distortion (Channel B)	0.00585 %	< 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)	0.00015 %	Not limit checked.
4th Harmonic Distortion (Channel B)	0.00011 %	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)	0.00025 %	Not limit checked.
5th Harmonic Distortion (Channel B)	0.00028 %	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)	0.00433 %	< 0.01 % > 0 %
4+HD + N (Channel B)	0.00422 %	< 0.01 % > 0 %
FFTD 6 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 3rd harmonic		
Hum (Channel A)	0.00323 %	< 0.017783 % > 0 %
Hum (Channel B)	0.00311 %	< 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)	0.00432 %	< 0.017783 % > 0 %
Noise (residual) (Channel B)	0.00421 %	< 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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A05 THD+N vs Freq: PASSED

Measured at 7/20/2019 3:08:26 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz



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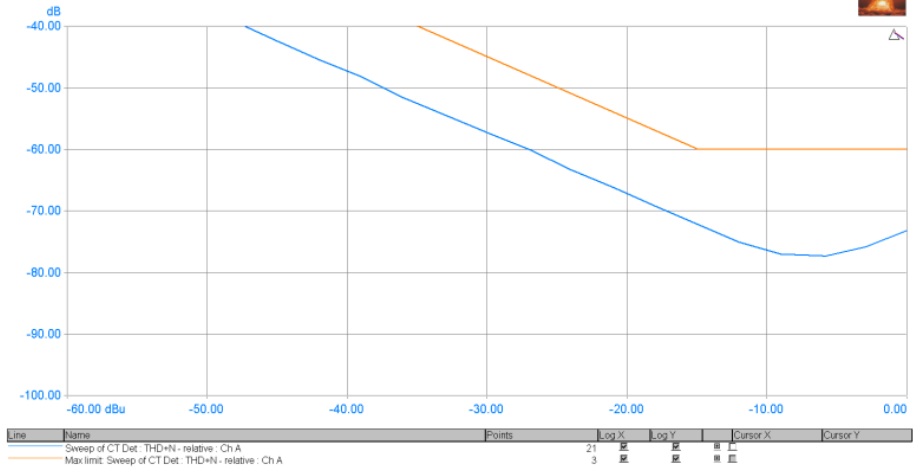
A06 THD+N vs Ampl: PASSED

Generator Settings

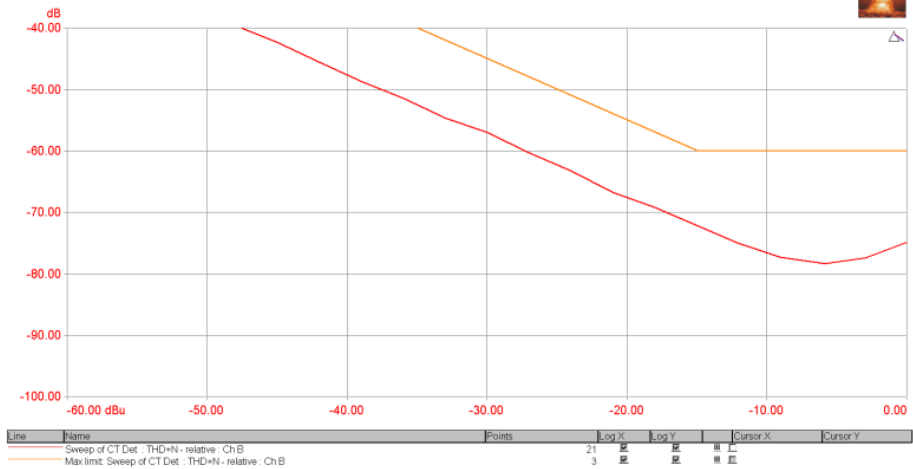
Channel A: sine, 0 dBu at 1000 Hz

Channel B: sine, 0 dBu at 1000 Hz

THD+N vs Amplitude



THD+N vs Amplitude



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A07 Noise, SNR: PASSED

Measured at 7/20/2019 3:08:46 PM

Generator Settings	
Channel A:	sine, -60 dBFS at 1000 Hz
Channel B:	sine, -60 dBFS at 1000 Hz

FFT Detector Readings		
Noise (unweighted) (Channel A)	-105.649 dBr	< 200 dBr > -200 dBr
Noise (unweighted) (Channel B)	-105.889 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)	-105.728 dBr	< 200 dBr > -200 dBr
SNR (Channel B)	-105.996 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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A08 Crosstalk A to B: PASSED

Measured at 7/20/2019 3:08:48 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

CTA Readings		
Cross-talk (Channel B RMS)	-64.747 dB	< -45 dB
Settings: Channel relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the opposite channel generator frequency		

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A09 Crosstalk B to A: PASSED

Measured at 7/20/2019 3:11:14 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

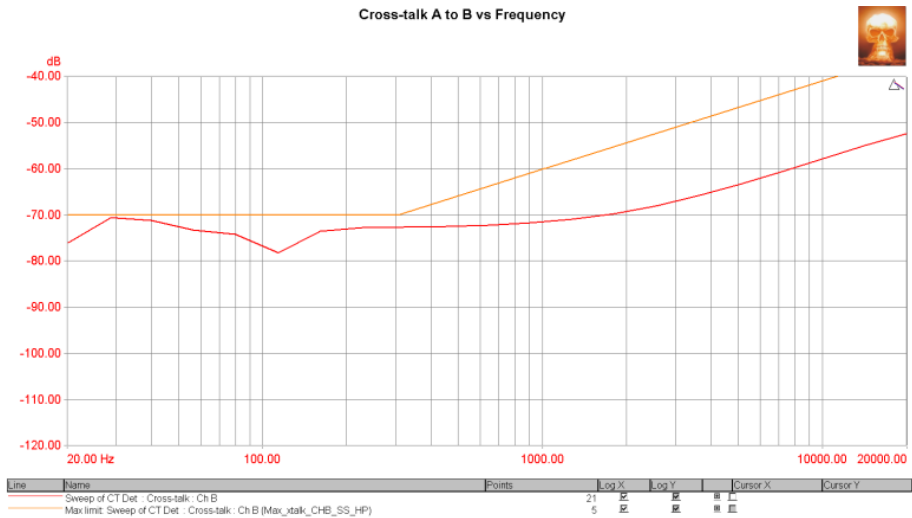
CTA Readings		
Cross-talk (Channel A RMS)	-73.386 dB	< -45 dB
Settings: Channel relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the opposite channel generator frequency		

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A10 Crosstalk A to B vs Freq: PASSED

Measured at 7/20/2019 3:08:52 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

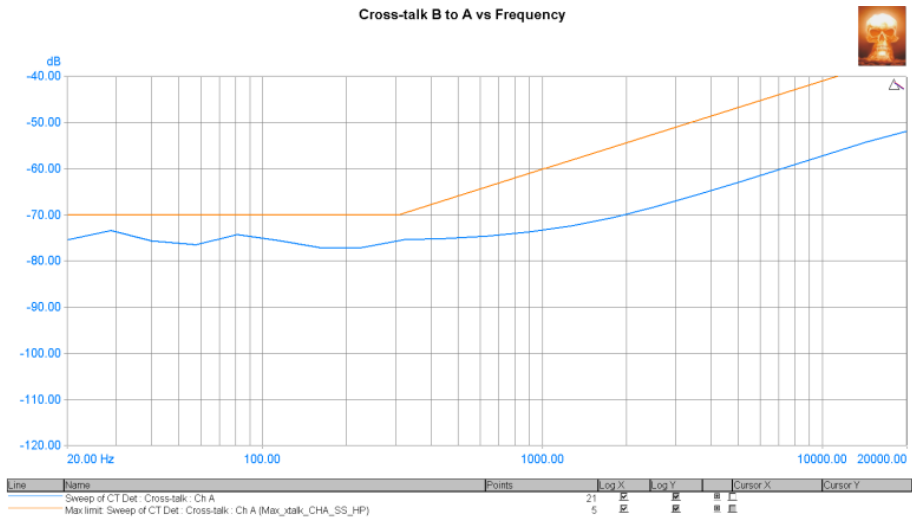


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A11 Crosstalk B to A vs Freq: PASSED

Measured at 7/20/2019 3:11:27 PM

Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz



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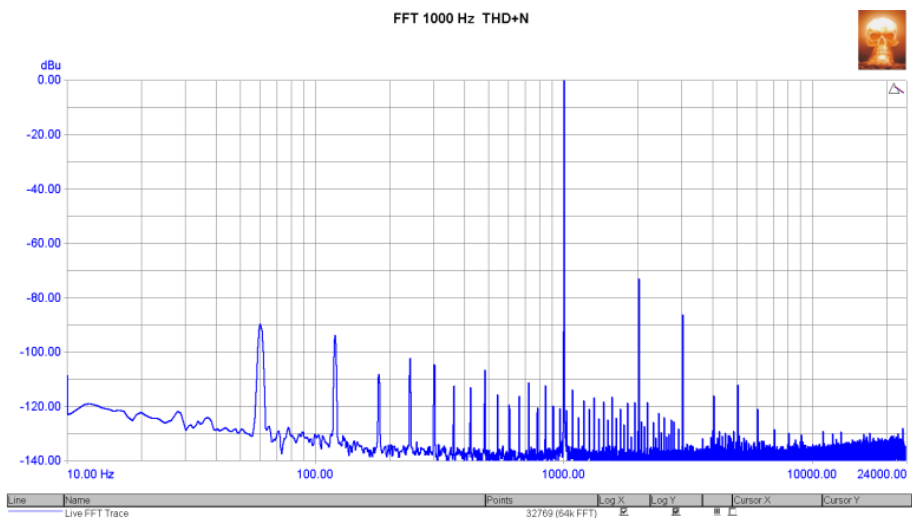
A12 FFT 1000 Hz THD+N: PASSED

Measured at 7/20/2019 3:09:04 PM

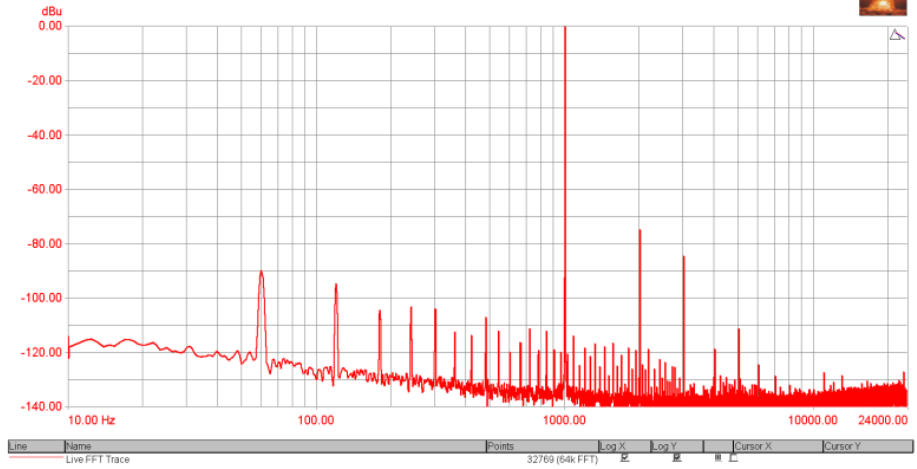
Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

Signal Analyzer Readings		
RMS amplitude (Selected : Ch A)	-0.037 dBu	Not limit checked.
RMS amplitude (Non-selected : Ch A)	0.019 dBu	Not limit checked.

CTA Readings		
THD+N - relative (Selected : Ch A RMS)	0.02210 %	< 0.1 % > 0 %
THD+N - relative (Non-selected : Ch A RMS)	0.01837 %	< 0.1 % > 0 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the input frequency		



FFT 1000 Hz THD+N



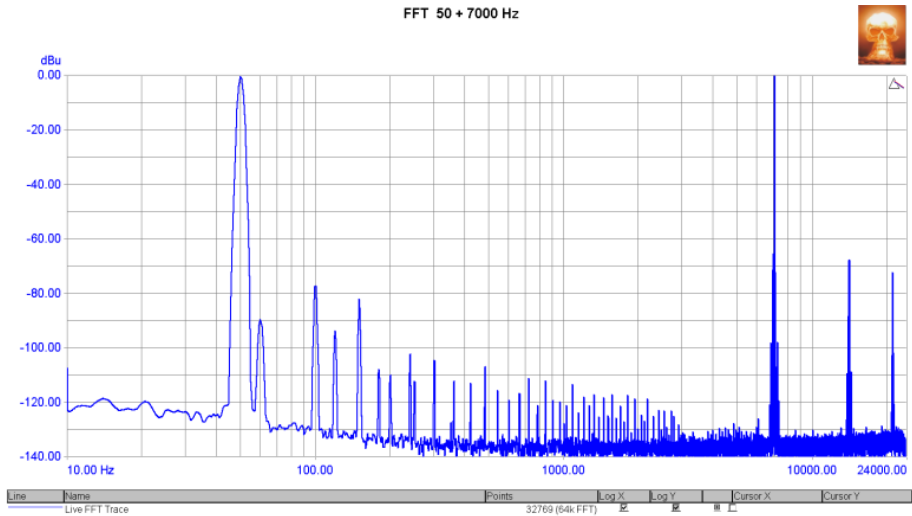
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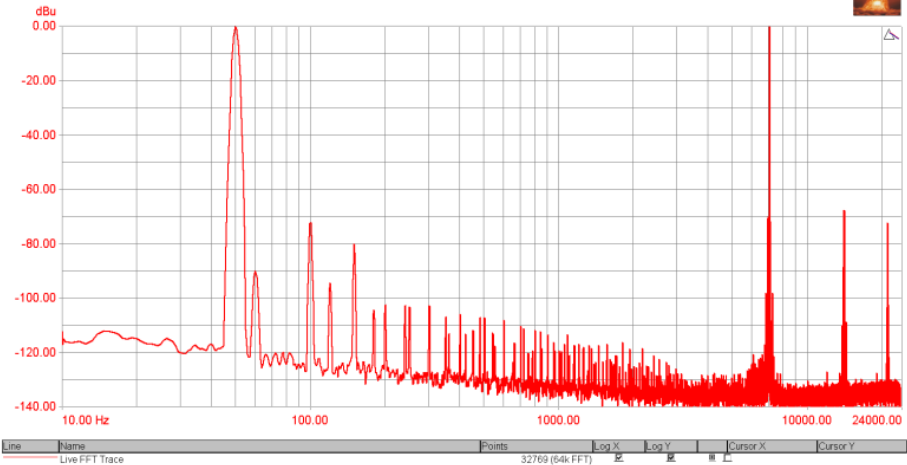
A13 FFT 50+7000Hz: PASSED

Measured at 7/20/2019 3:09:27 PM

Generator Settings	
Channel A:	Twin-tone, 0 dBu at 50 Hz and 1 amplitude ratio at 7000Hz
Channel B:	Twin-tone, 0 dBu at 50 Hz and 1 amplitude ratio at 7000Hz

Signal Analyzer Readings			
RMS amplitude (Channel A)		2.885 dBu	Not limit checked.
RMS amplitude (Channel B)		2.943 dBu	Not limit checked.





FFT Detector Readings

IMD SMPTE-DIN (Channel A)	0.05783 %	< 0.2 % > 0 %
IMD SMPTE-DIN (Channel B)	0.04097 %	< 0.2 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with intermodulation notch band reject		

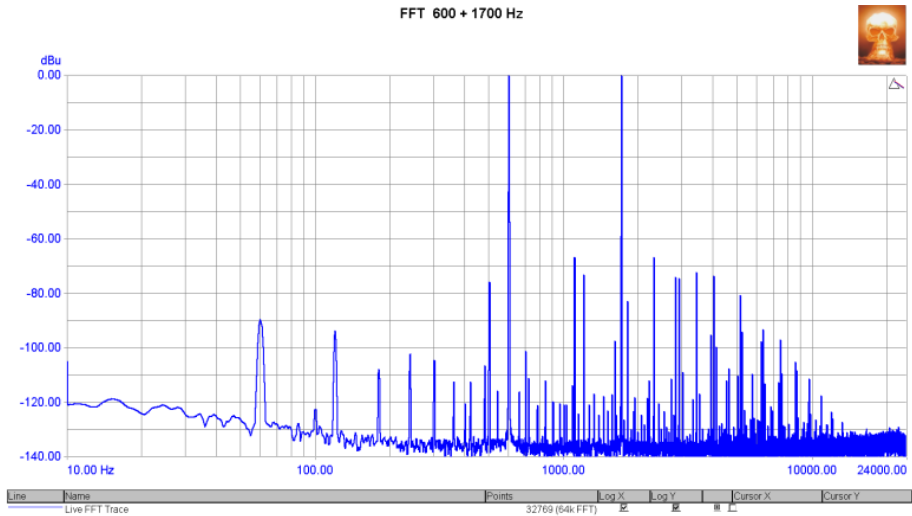
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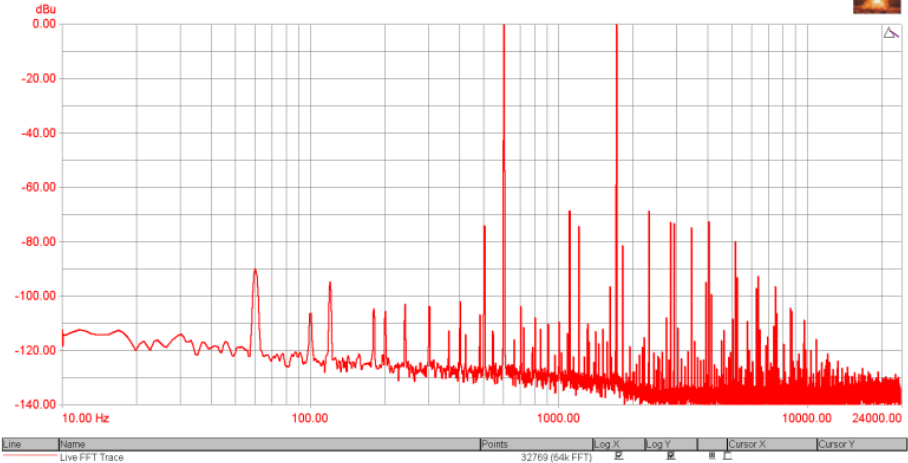
A14 FFT 600+1700 Hz: PASSED

Measured at 7/20/2019 3:09:50 PM

Generator Settings	
Channel A:	Twin-tone, 0 dBu at 600 Hz and 1 amplitude ratio at 1700Hz
Channel B:	Twin-tone, 0 dBu at 600 Hz and 1 amplitude ratio at 1700Hz

Signal Analyzer Readings		
RMS amplitude (Channel A)	2.996 dBu	Not limit checked.
RMS amplitude (Channel B)	3.011 dBu	Not limit checked.





FFT Detector Readings

IMD SMPTE-DIN (Channel A)	0.04831 %	< 0.2 % > 0 %
IMD SMPTE-DIN (Channel B)	0.03989 %	< 0.2 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with intermodulation notch band reject		

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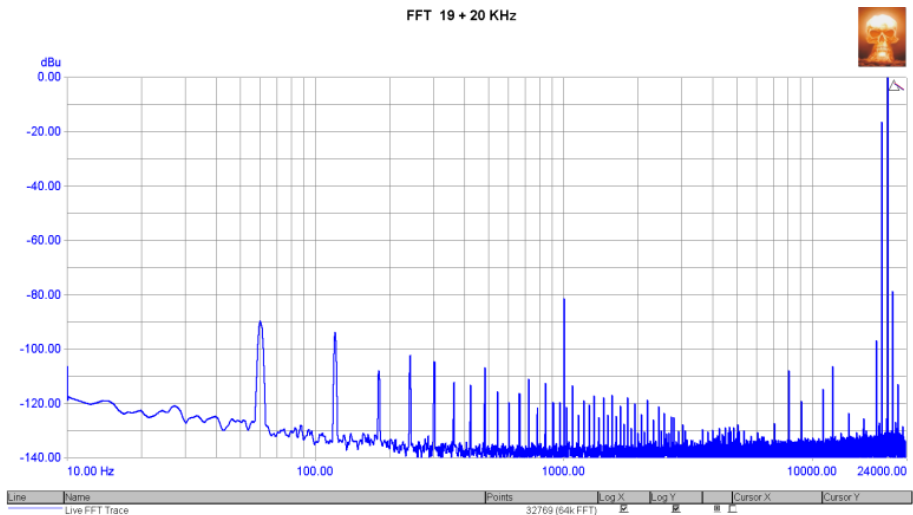
A15 FFT 19+20 KHz: PASSED

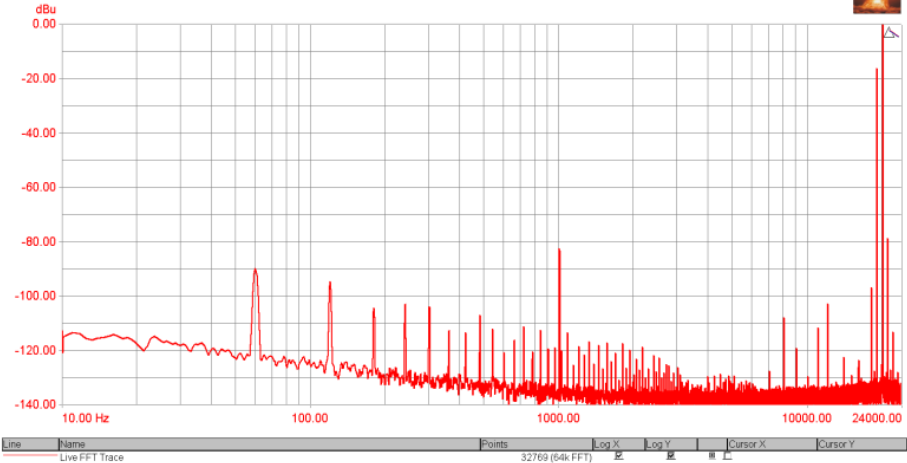
Measured at 7/20/2019 3:10:12 PM

Generator Settings	
Channel A:	Twin-tone, -16 dBu at 19000 Hz and 18.037 dB offset at 1000 Hz offset
Channel B:	Twin-tone, -16 dBu at 19000 Hz and 18.037 dB offset at 1000 Hz offset

Signal Analyzer Readings		
RMS amplitude (Channel A)	1.831 dBu	Not limit checked.
RMS amplitude (Channel B)	1.904 dBu	Not limit checked.

CTA Readings		
IMD CCIF (Channel A RMS)	0.00694 %	< 0.1 %
IMD CCIF (Channel B RMS)	0.00610 %	< 0.1 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the intermodulation difference frequency		





FFT Detector Readings

IMD CCIF (Channel A)	0.00691 %	< 0.1 %
IMD CCIF (Channel B)	0.00606 %	< 0.1 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-pass filter at the intermodulation difference frequency		

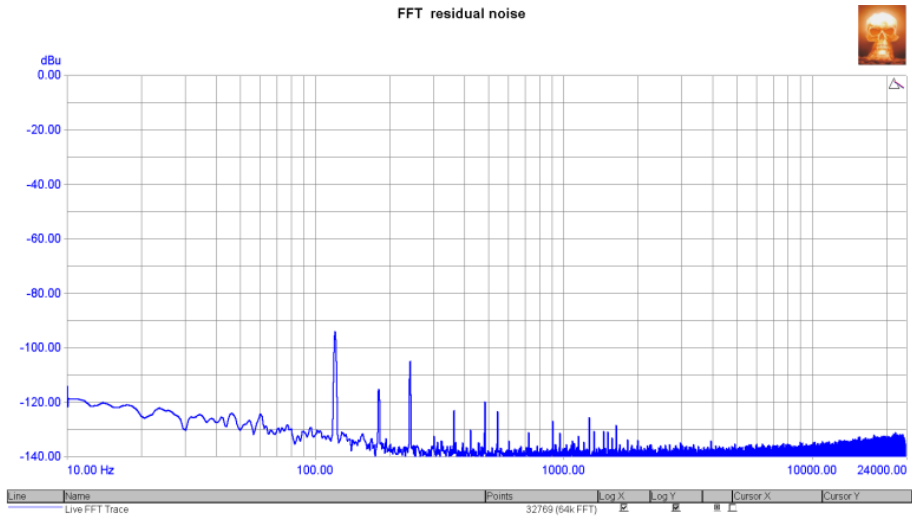
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A16 FFT residual noise: PASSED

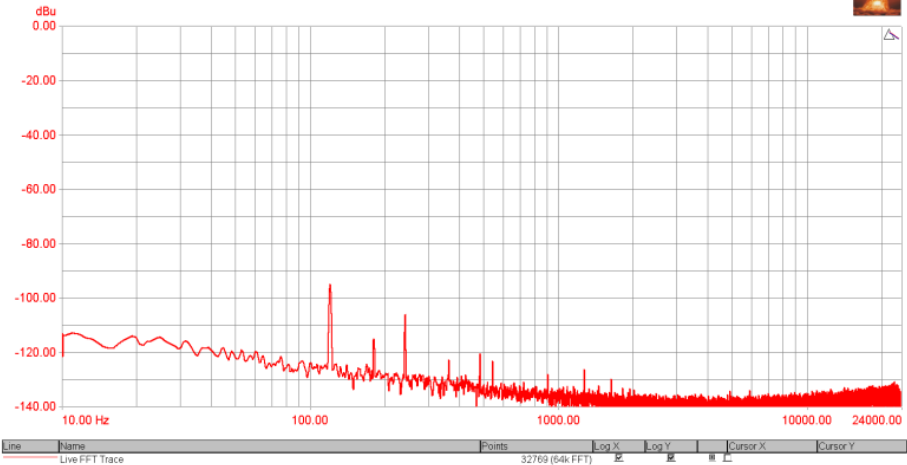
Measured at 7/20/2019 3:10:35 PM

Generator Settings	
Channel A:	Off
Channel B:	Off

Signal Analyzer Readings		
RMS amplitude (Channel A)	-91.941 dBu	Not limit checked.
RMS amplitude (Channel B)	-91.660 dBu	Not limit checked.



FFT residual noise



FFT Detector Readings

Noise (residual) (Channel A)	-96.865 dBu	< -80 dBu > -140 dBu
Noise (residual) (Channel B)	-95.631 dBu	< -80 dBu > -140 dBu
FFTD 1 Settings: 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 10th harmonic		