

ECP Audio T4 Mullard CV4024 32R unBal 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 2/6/2020 11:20:29 AM

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)	-0.230 dBu	< 3 dBu > -3 dBu
RMS amplitude (Channel B)	0.236 dBu	< 3 dBu > -3 dBu
Inter-channel phase	-0.02 °	< 10 ° > -10 °

CTA Readings		
Gain (Channel A RMS)	-0.230 dB	< 3 dB > -3 dB
Gain (Channel B RMS)	0.236 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		

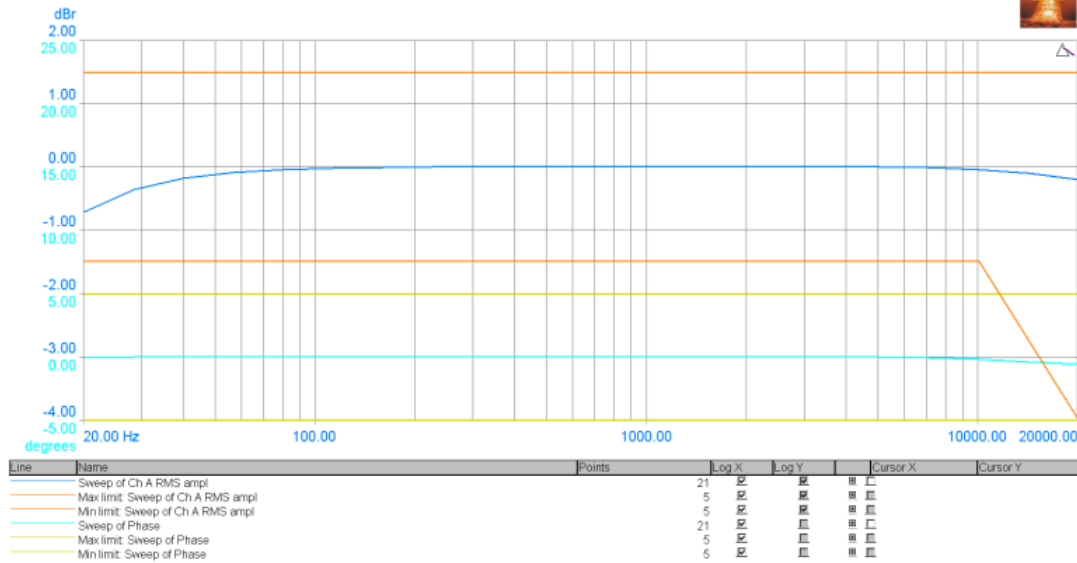
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A02 Ampl, Phase vs Freq: PASSED

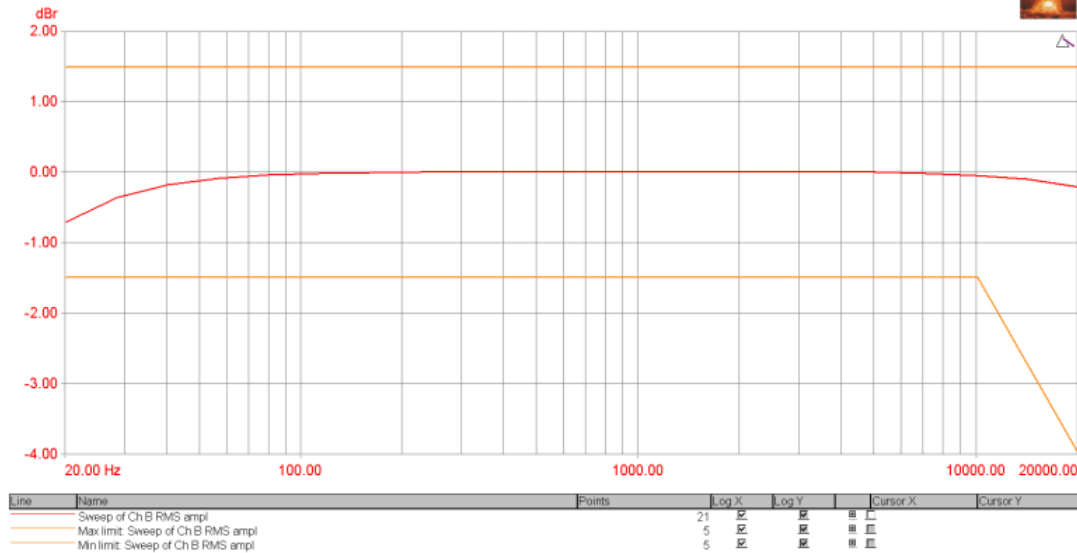
Measured at 2/6/2020 11:20:32 AM

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

Frequency Response and Inter-channel Phase



Frequency Response and Inter-channel Phase



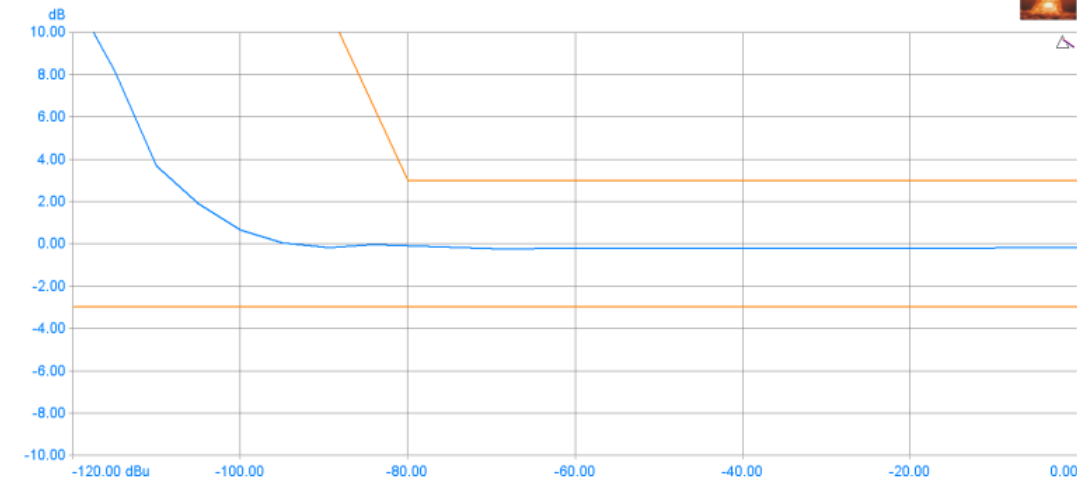
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A03 Gain vs Ampl: **PASSED**

Measured at 2/6/2020 11:20:39 AM

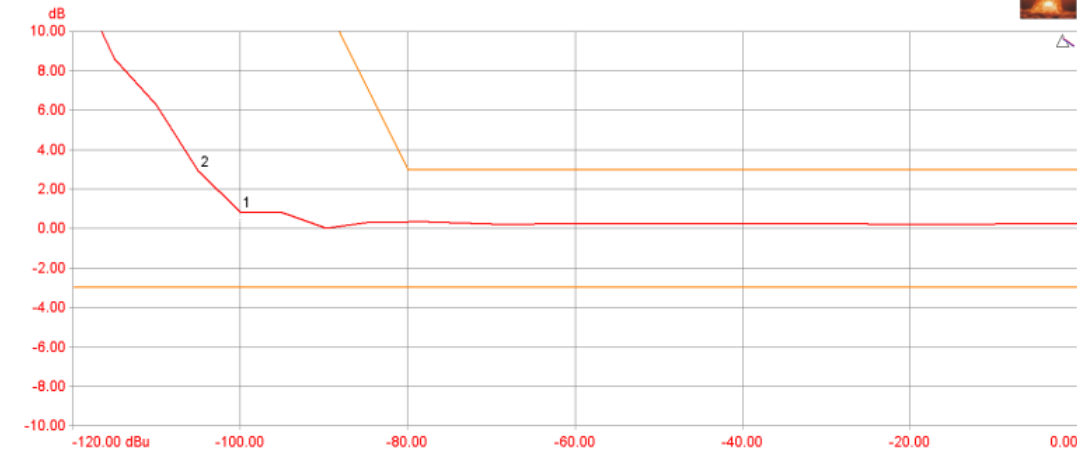
Generator Settings	
Channel A:	sine, 0 dBu at 1000 Hz
Channel B:	sine, 0 dBu at 1000 Hz

Gain vs Amplitude



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y
1	Sweep of CT Det.: Gain: Ch A	25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Max limit Sweep of CT Det.: Gain: Ch A	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Min limit Sweep of CT Det.: Gain: Ch A	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Gain vs Amplitude



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y	Comment/Label
1	Sweep of CT Det.: Gain: Ch B	25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1: Sweep timed out
2	Max limit Sweep of CT Det.: Gain: Ch B	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2: Sweep timed out
3	Min limit Sweep of CT Det.: Gain: Ch B	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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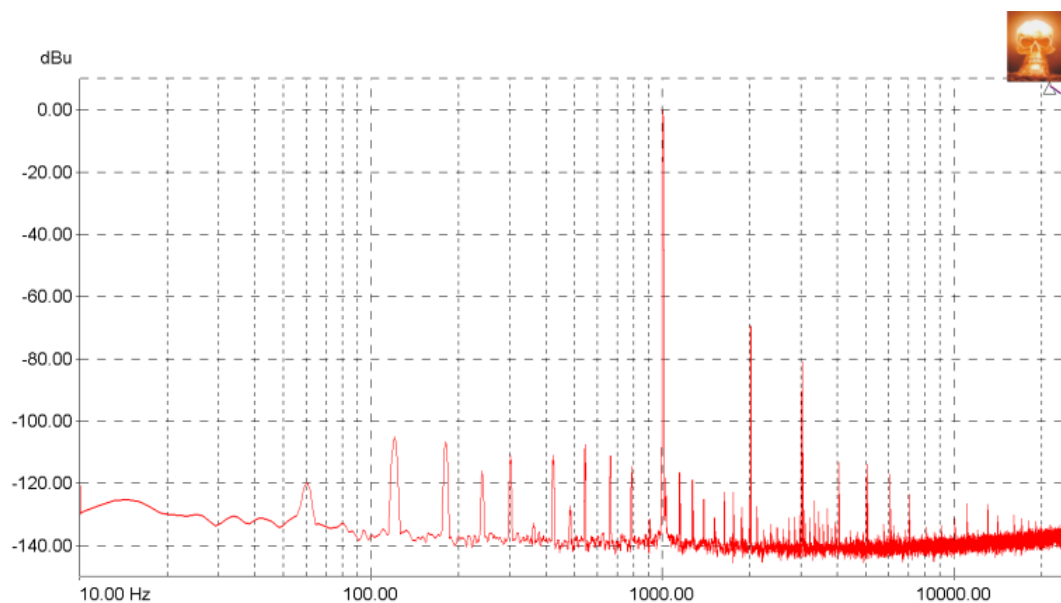
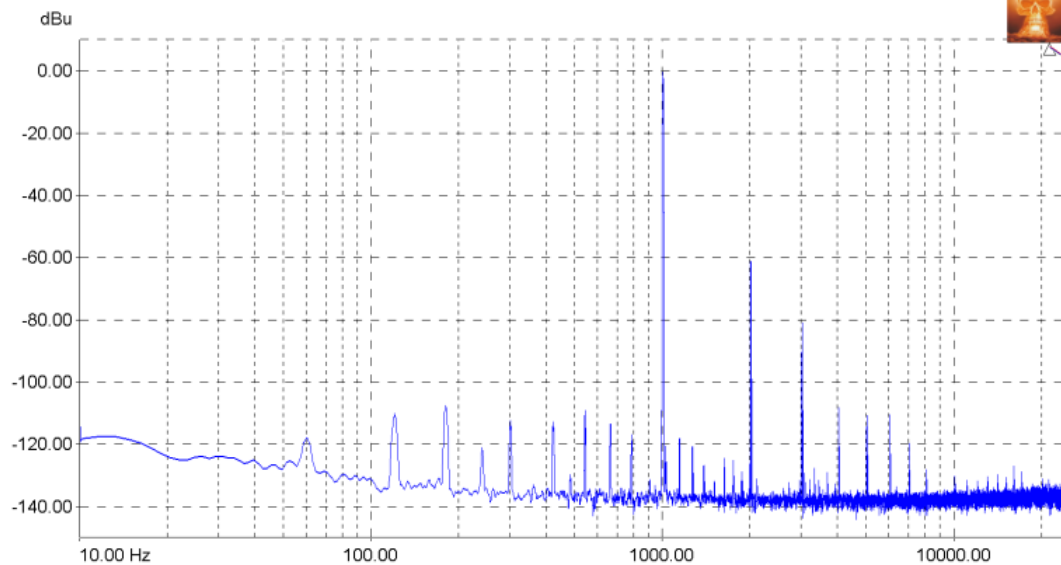
A04 THD+N, THD, nth-HD 2 3 4 - THD+N minus 2nd and 3rd harmonics: **PASSED**

Measured at 2/6/2020 11:20:53 AM

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)	-0.226 dBu	Not limit checked.
RMS amplitude (Channel B)	0.231 dBu	Not limit checked.

CTA Readings		
THD+N - relative (Channel A RMS)	0.08294 %	< 200 % > 0 %
THD+N - relative (Channel B RMS)	0.03134 %	< 200 % > 0 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the input frequency		



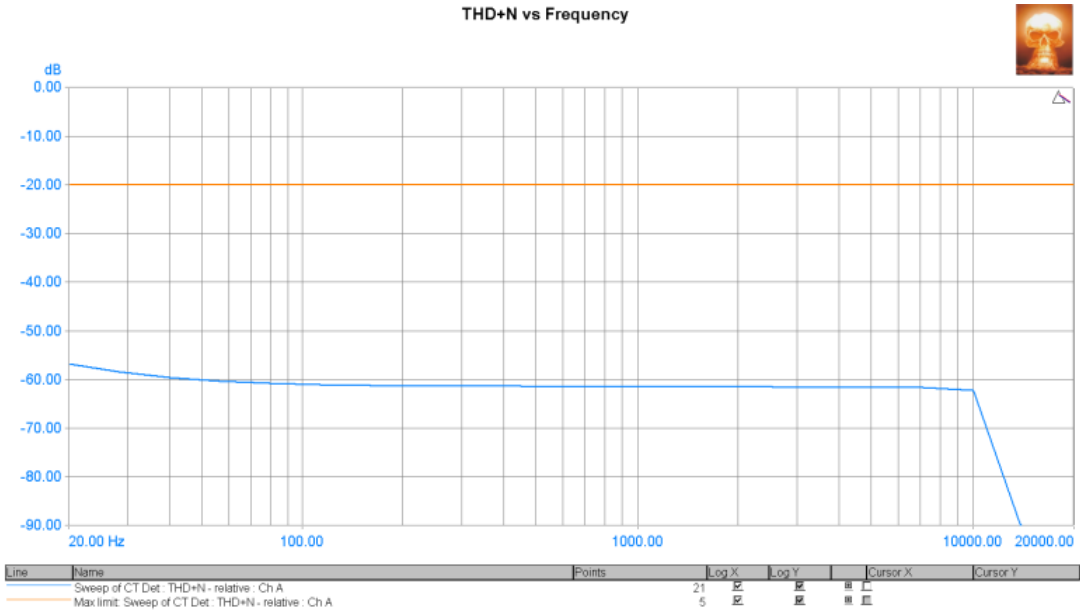
FFT Detector Readings		
THD (Channel A)	0.08891 %	< 200 % > 0 %
THD (Channel B)	0.03330 %	< 200 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filters from the 2nd to 10th harmonics		
2nd Harmonic Distortion (Channel A)	0.08847 %	< 200 % > 0 %
2nd Harmonic Distortion (Channel B)	0.03223 %	< 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)	0.00885 %	< 200 % > 0 %
3rd Harmonic Distortion (Channel B)	0.00839 %	< 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)	0.00040 %	Not limit checked.
4th Harmonic Distortion (Channel B)	0.00021 %	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)	0.00030 %	Not limit checked.
5th Harmonic Distortion (Channel B)	0.00020 %	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)	0.00148 %	< 0.05 % > 0 %
4+HD + N (Channel B)	0.00134 %	< 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)	0.00016 %	< 0.017783 % > 0 %
Hum (Channel B)	0.00011 %	< 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)	0.00135 %	< 0.017783 % > 0 %
Noise (residual) (Channel B)	0.00130 %	< 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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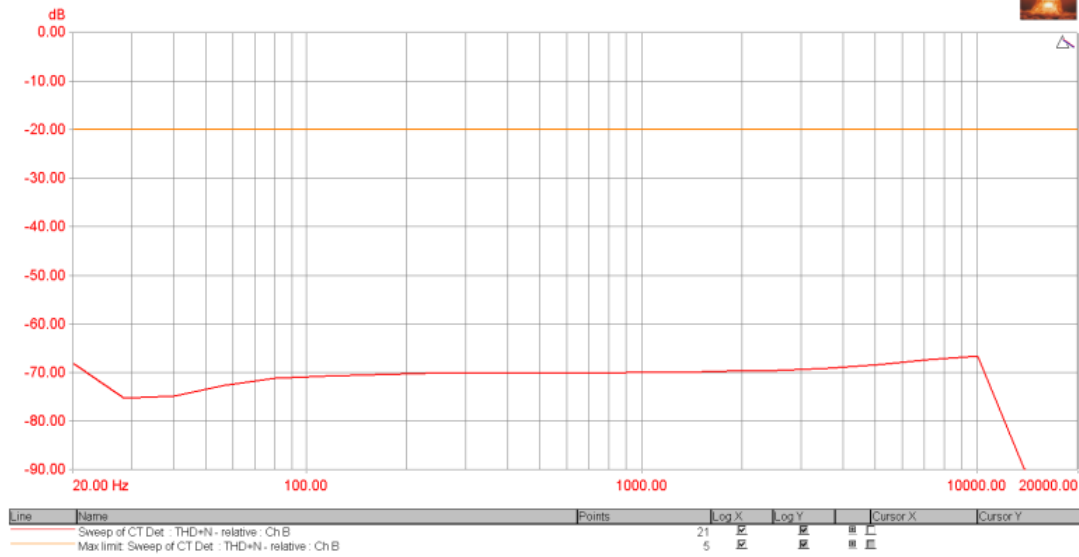
A05 THD+N vs Freq: PASSED

Measured at 2/6/2020 11:21:56 AM

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



THD+N vs Frequency



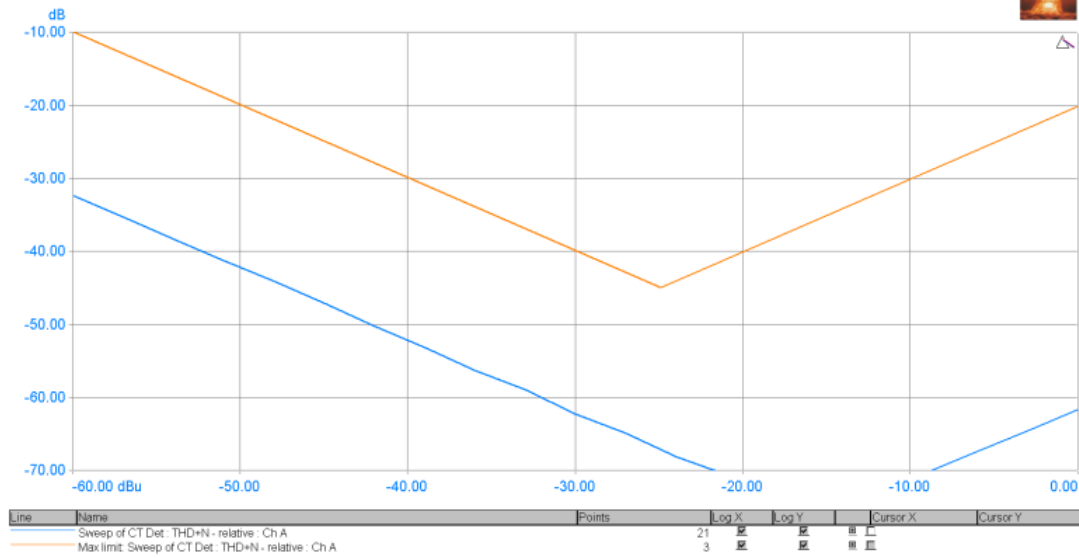
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A06 THD+N vs Ampl: PASSED

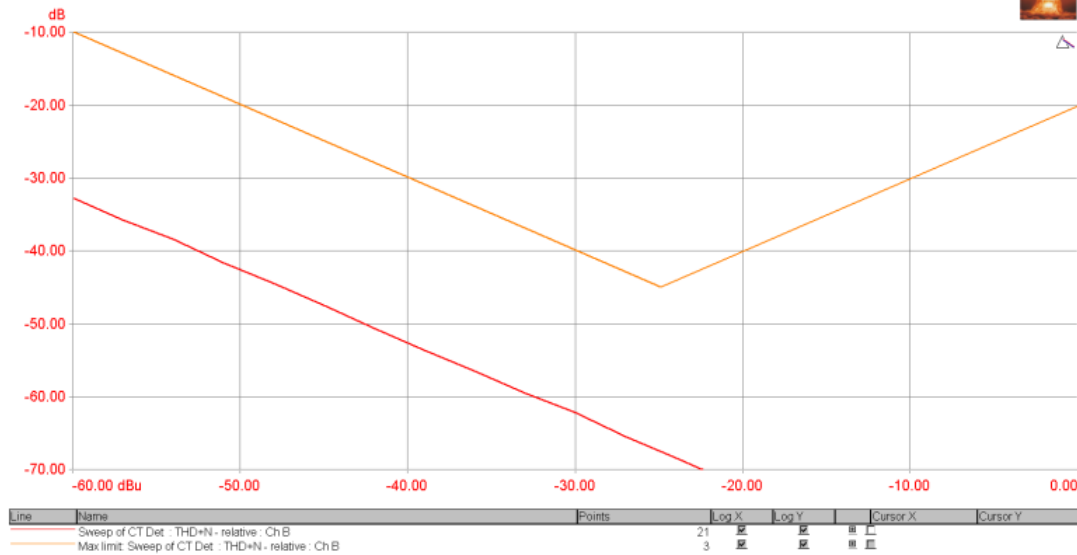
Measured at 2/6/2020 11:22:05 AM

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 2/6/2020 11:22:14 AM

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)	-110.369 dBr	< 200 dBr > -200 dBr
Noise (unweighted) (Channel B)	-109.982 dBr	< 200 dBr > -200 dBr
FFT 1 Settings: 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-reject filter at the generator frequency		
SNR (Channel A)	-110.736 dBr	< 200 dBr > -200 dBr
SNR (Channel B)	-110.365 dBr	< 200 dBr > -200 dBr
FFT 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 2/6/2020 11:22:16 AM

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)	-75.855 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 2/6/2020 11:22:19 AM

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

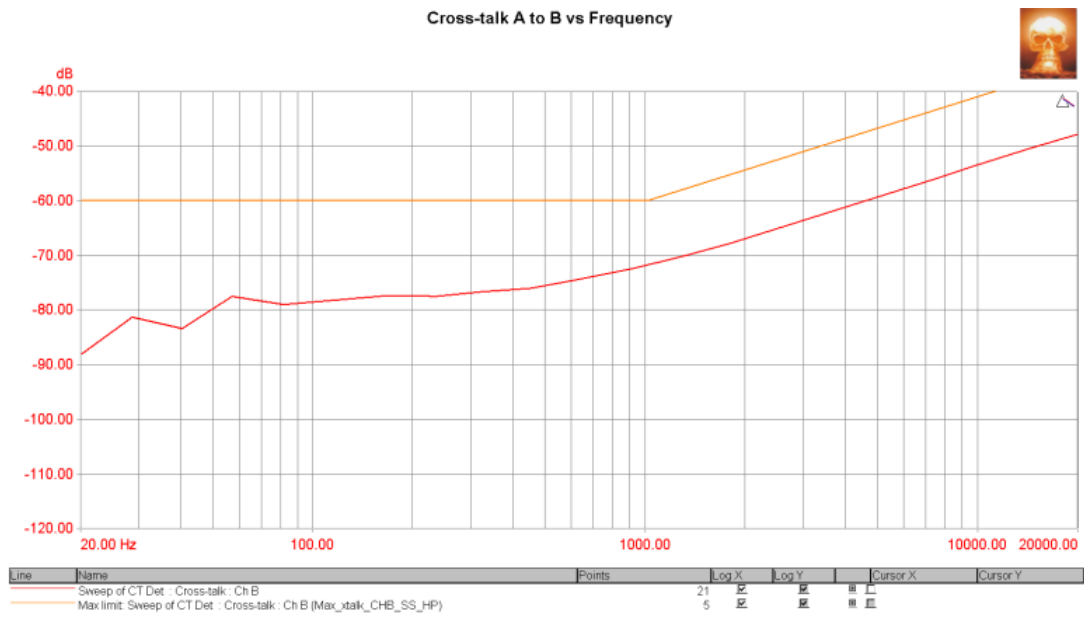
CTA Readings		
Cross-talk (Channel A RMS)	-74.993 dB	< -45 dB
Settings: Channel relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the opposite channel generator frequency		

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A10 Crosstalk A to B vs Freq: PASSED

Measured at 2/6/2020 11:22:21 AM

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

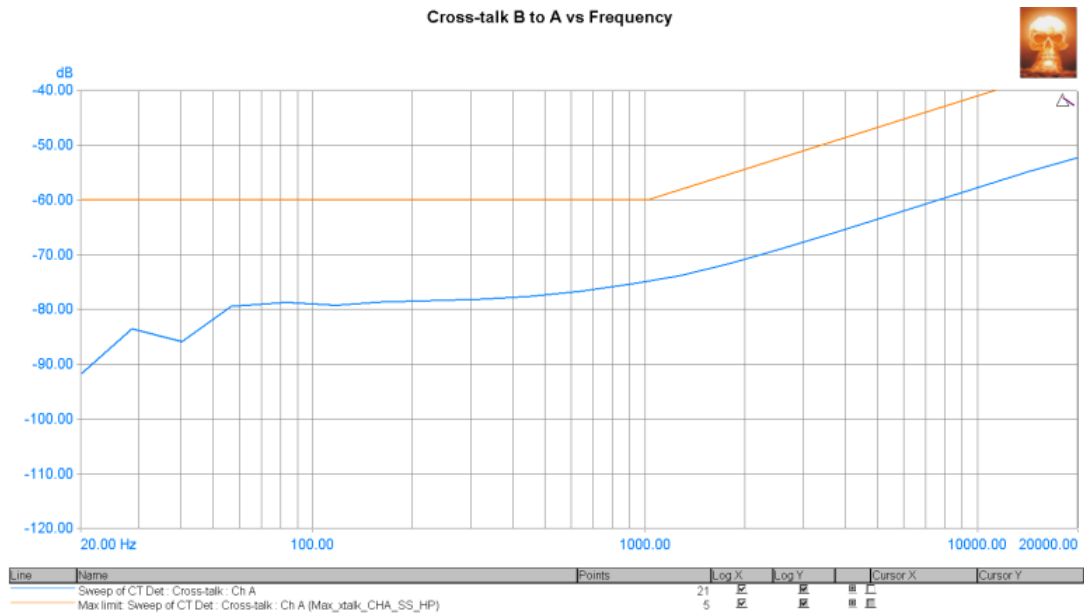


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A11 Crosstalk B to A vs Freq: PASSED

Measured at 2/6/2020 11:22:28 AM

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



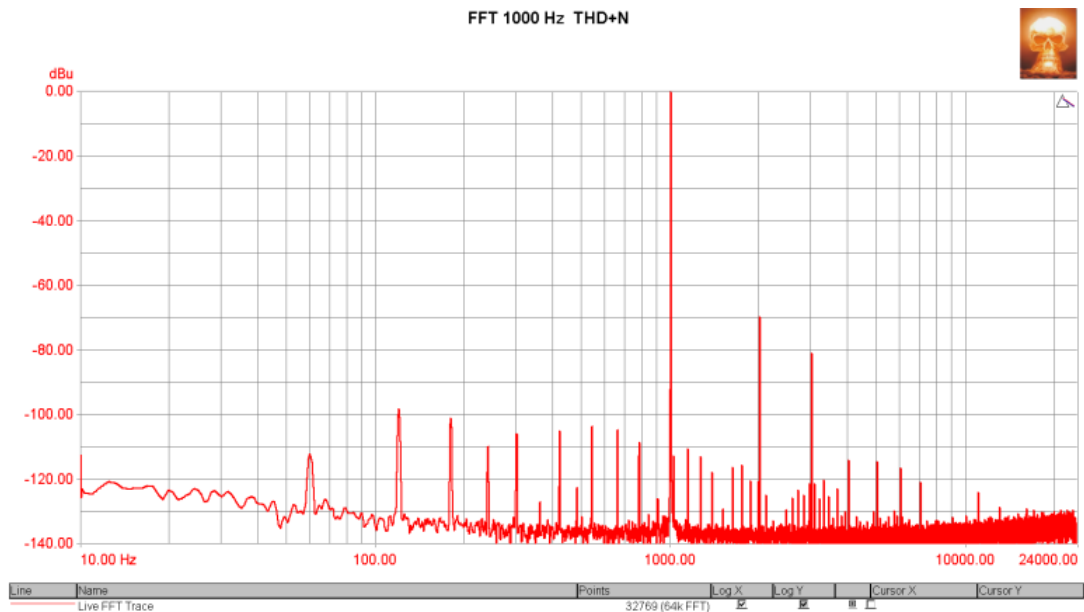
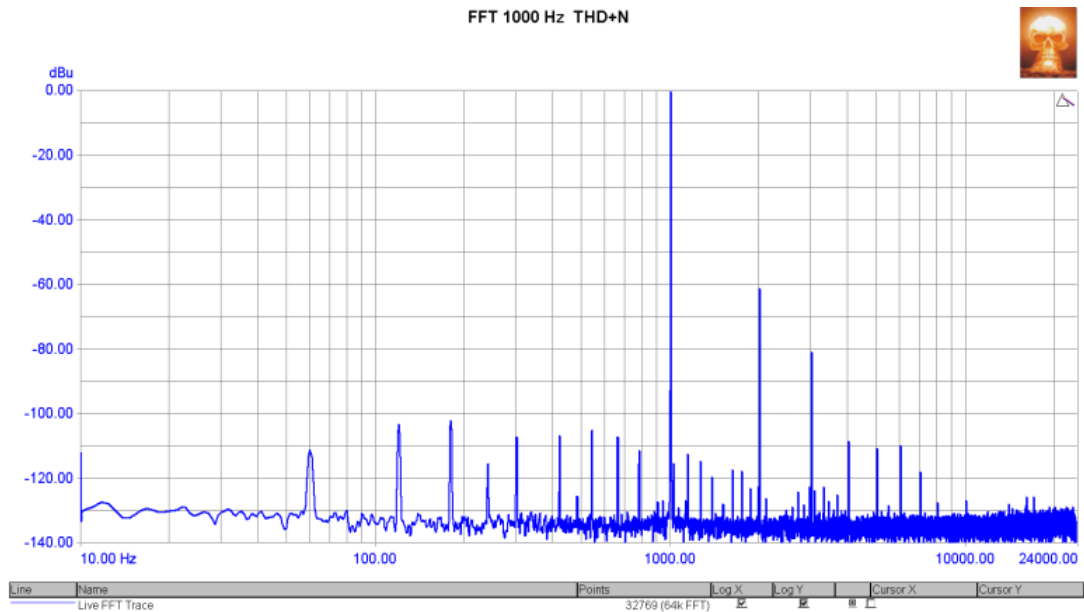
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A12 FFT 1000 Hz THD+N: PASSED

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)	-0.224 dBu	Not limit checked.
RMS amplitude (Non-selected : Ch A)	0.236 dBu	Not limit checked.

CTA Readings		
THD+N - relative (Selected : Ch ARMS)	0.08332 %	< 5 % > 0 %
THD+N - relative (Non-selected : Ch ARMS)	0.03128 %	< 5 % > 0 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the input frequency		

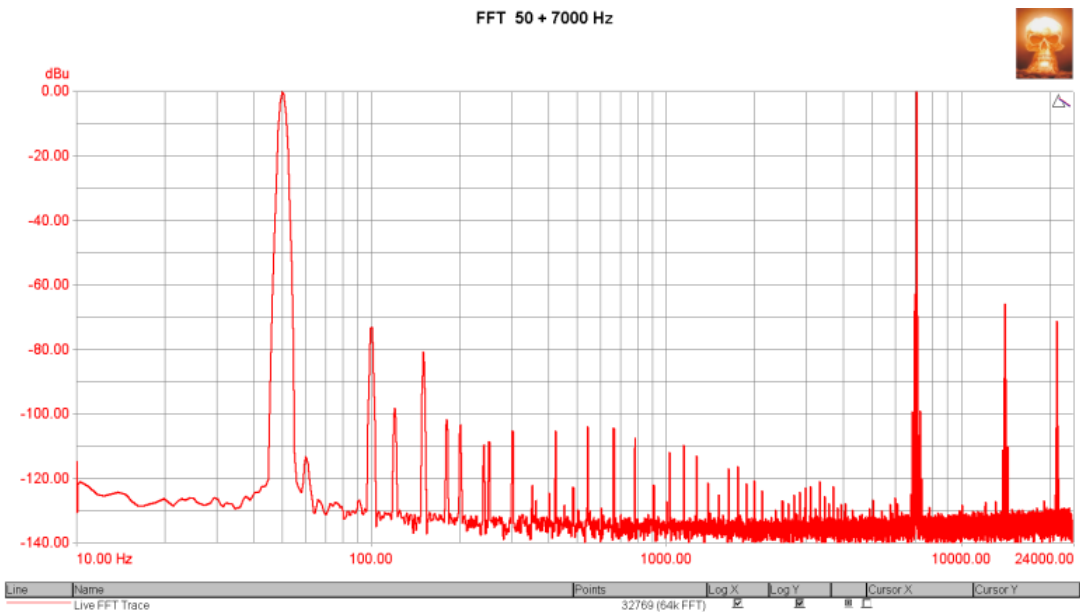
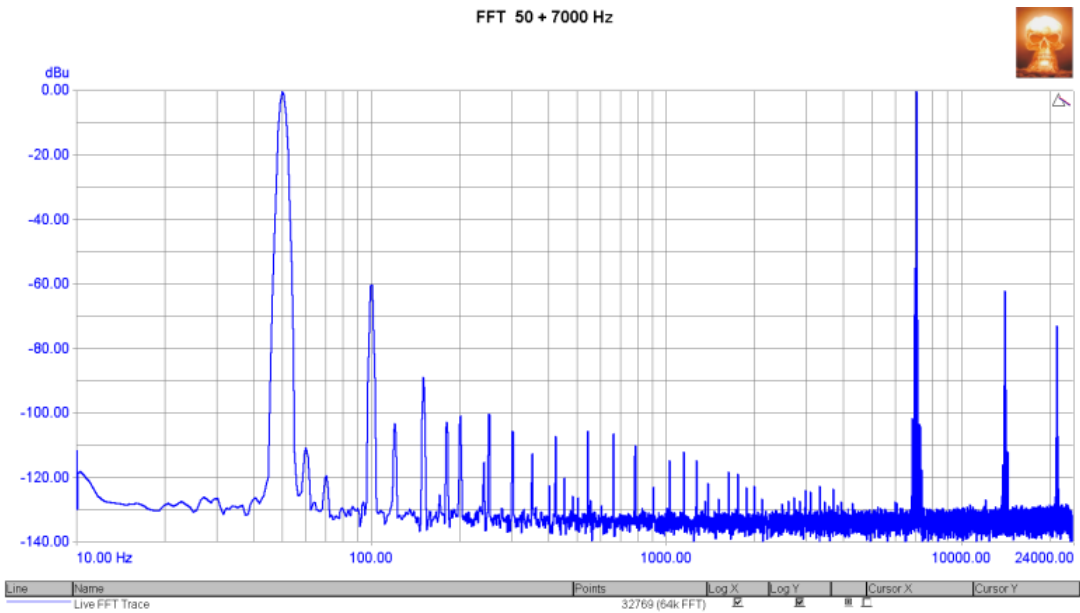


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A13 FFT 50+7000Hz: PASSED

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)	2.709 dBu	Not limit checked.
RMS amplitude (Channel B)	3.159 dBu	Not limit checked.



FFT Detector Readings		
IMD SMPTE-DIN (Channel A)	0.17955 %	< 7 % > 0 %
IMD SMPTE-DIN (Channel B)	0.07876 %	< 7 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with intermodulation notch band reject		

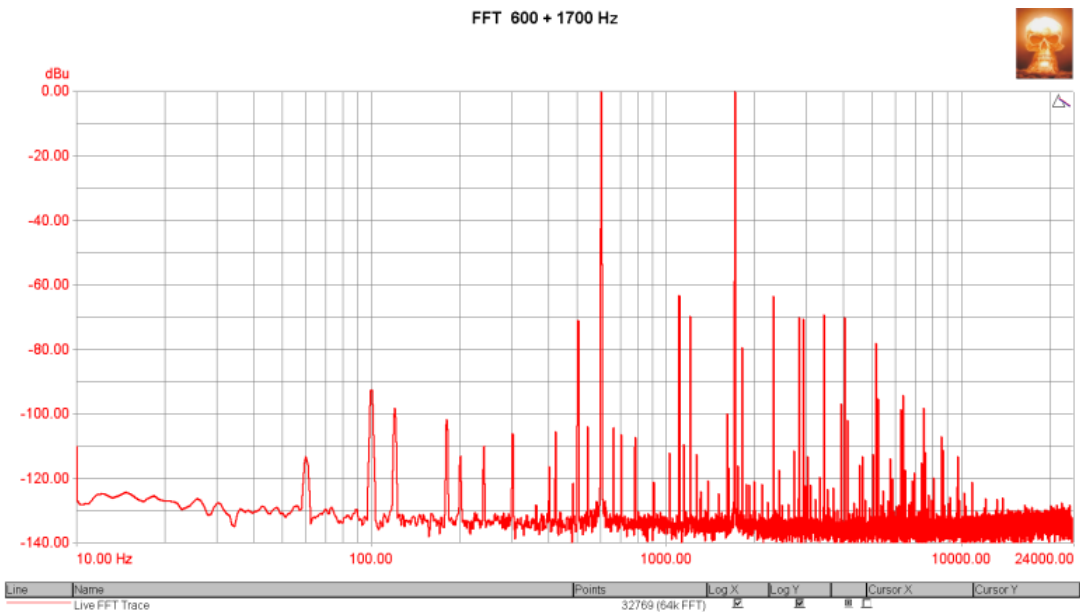
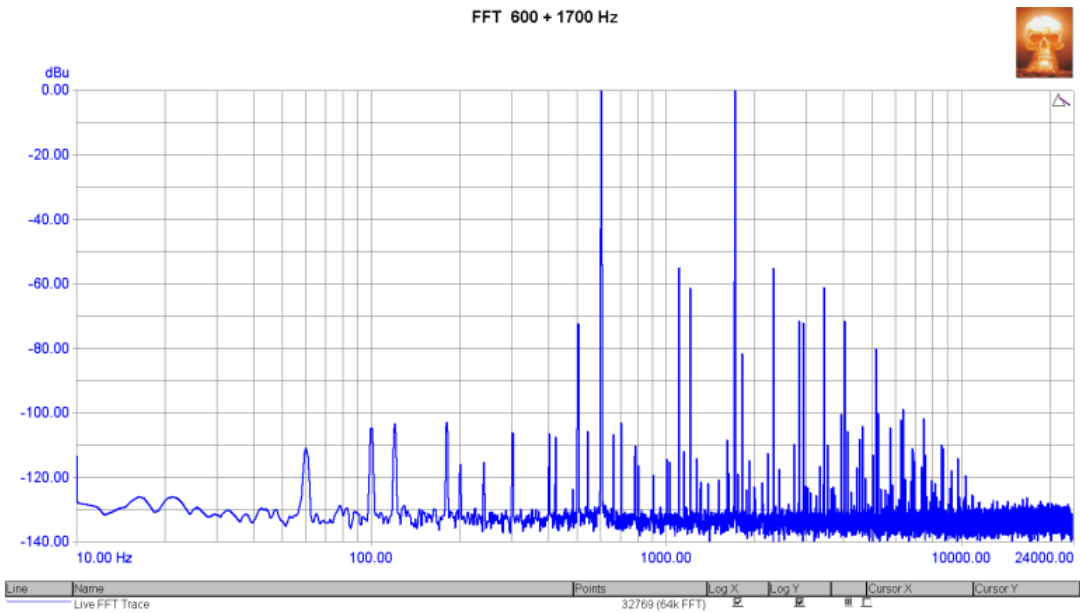
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A14 FFT 600+1700 Hz: PASSED

Measured at 2/6/2020 11:23:20 AM

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)	2.806 dBu	Not limit checked.
RMS amplitude (Channel B)	3.216 dBu	Not limit checked.



FFT Detector Readings		
IMD SMPTE-DIN (Channel A)	0.18953 %	< 7 % > 0 %
IMD SMPTE-DIN (Channel B)	0.06914 %	< 7 % > 0 %
FFTD 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with intermodulation notch band reject		

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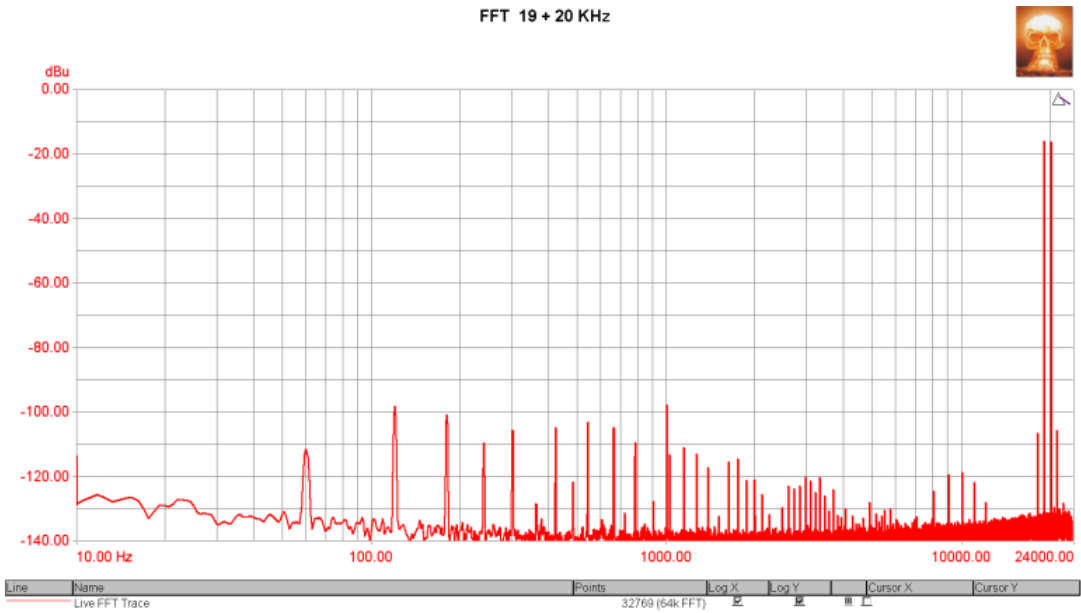
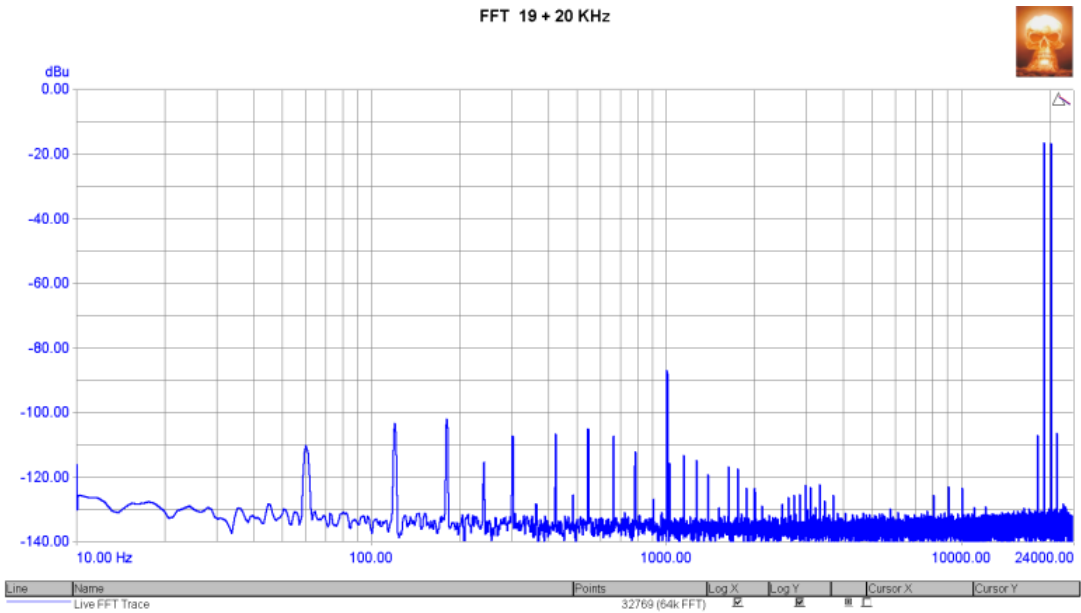
A15 FFT 19+20 KHz: PASSED

Measured at 2/6/2020 11:23:43 AM

Generator Settings		
Channel A:	Twin-tone, -16 dBu at 19000 Hz and 1 amplitude ratio at 1000 Hz offset	
Channel B:	Twin-tone, -16 dBu at 19000 Hz and 1 amplitude ratio at 1000 Hz offset	

Signal Analyzer Readings		
RMS amplitude (Channel A)	-13.455 dBu	Not limit checked.
RMS amplitude (Channel B)	-13.019 dBu	Not limit checked.

CTA Readings		
IMD CCIF (Channel A RMS)	0.02125 %	< 1 %
IMD CCIF (Channel B RMS)	0.00582 %	< 1 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the intermodulation difference frequency		



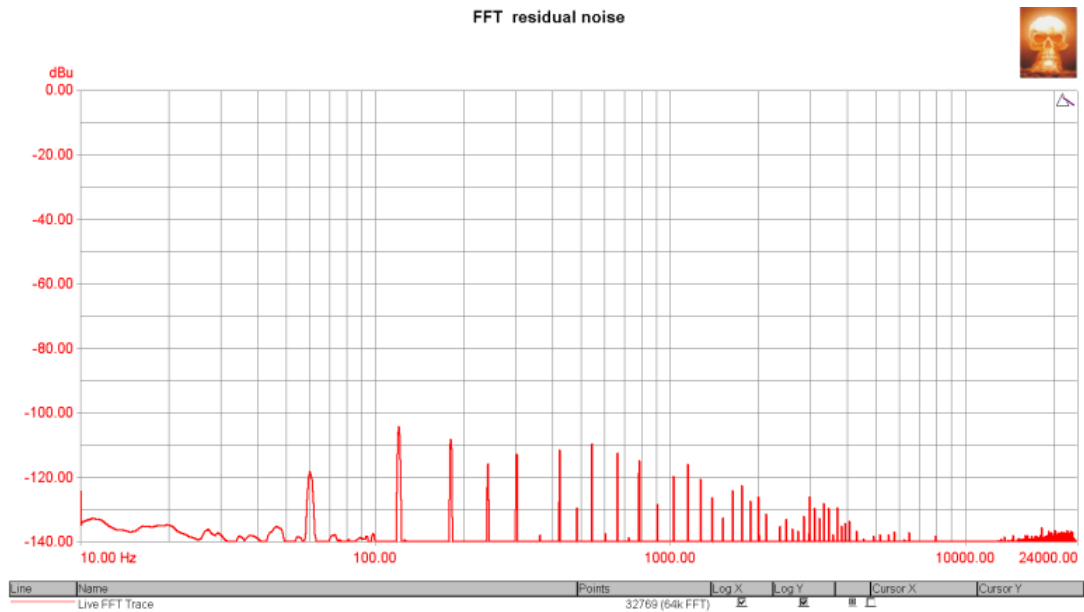
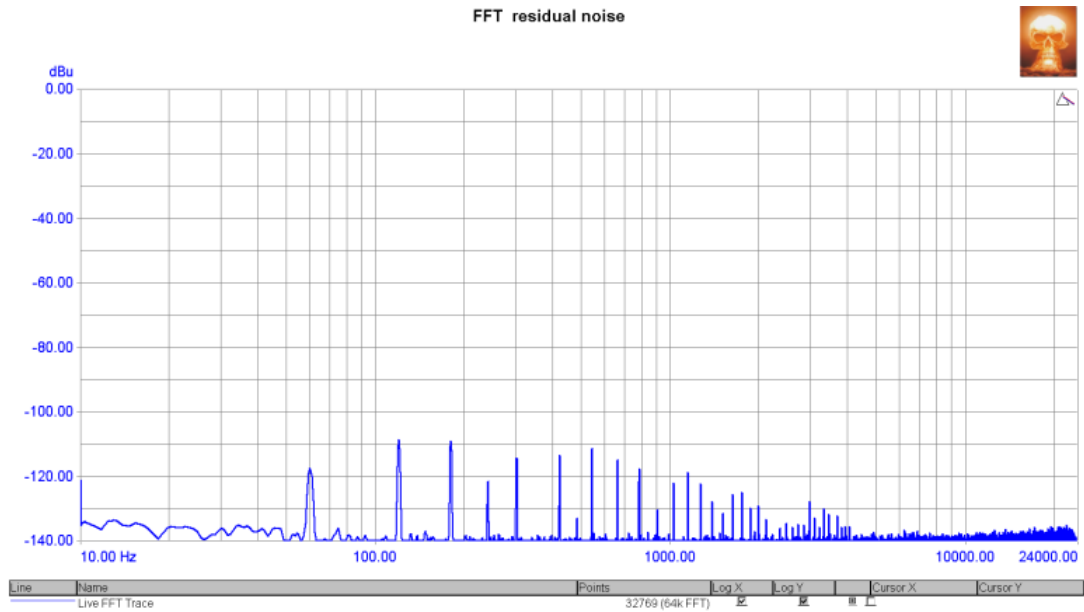
FFT Detector Readings		
IMD CCIF (Channel A)	0.02111 %	< 1 %
IMD CCIF (Channel B)	0.00586 %	< 1 %
FFT 1 Settings: Self relative, 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-pass filter at the intermodulation difference frequency		

A16 FFT residual noise: PASSED

Measured at 2/6/2020 11:24:06 AM

Generator Settings			
Channel A:		Off	
Channel B:		Off	

Signal Analyzer Readings			
RMS amplitude (Channel A)		-91.975 dBu	Not limit checked.
RMS amplitude (Channel B)		-91.844 dBu	Not limit checked.



FFT Detector Readings			
Noise (residual) (Channel A)		-98.377 dBu	< -80 dBu > -140 dBu
Noise (residual) (Channel B)		-98.376 dBu	< -80 dBu > -140 dBu

FFTD 1 Settings: 22 Hz - 22 KHz, unweighted with band-reject notch filters, fundamental to the 10th harmonic