

Bifrost-2 Optical 44K SE 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 - analyzer comparison	✓
A04 THD+N,THD, nth-HD	✓
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	✓
A17 FFT -90 dBFS	OK
A18 FFT -90 dBFS 16 bit	OK
A19 FFT imaging	OK
A20 FFT inferred jitter	OK

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 1/21/2020 4:31:34 PM

Generator Settings			
Channel A:	sine, 0 dBFS at 1000 Hz		
Channel B:	sine, 0 dBFS at 1000 Hz		
Signal Analyzer Readings			
RMS amplitude (Channel A)	8.286 dBu	< 24 dBu	> 0 dBu
RMS amplitude (Channel B)	8.284 dBu	< 24 dBu	> 0 dBu
Inter-channel phase	-0.02 °	< 10 °	> -10 °
CTA Readings			
Gain (Channel A RMS)	-0.001 dB	< 20 dB	> -40 dB
Gain (Channel B RMS)	-0.002 dB	< 20 dB	> -40 dB
Settings: Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency			

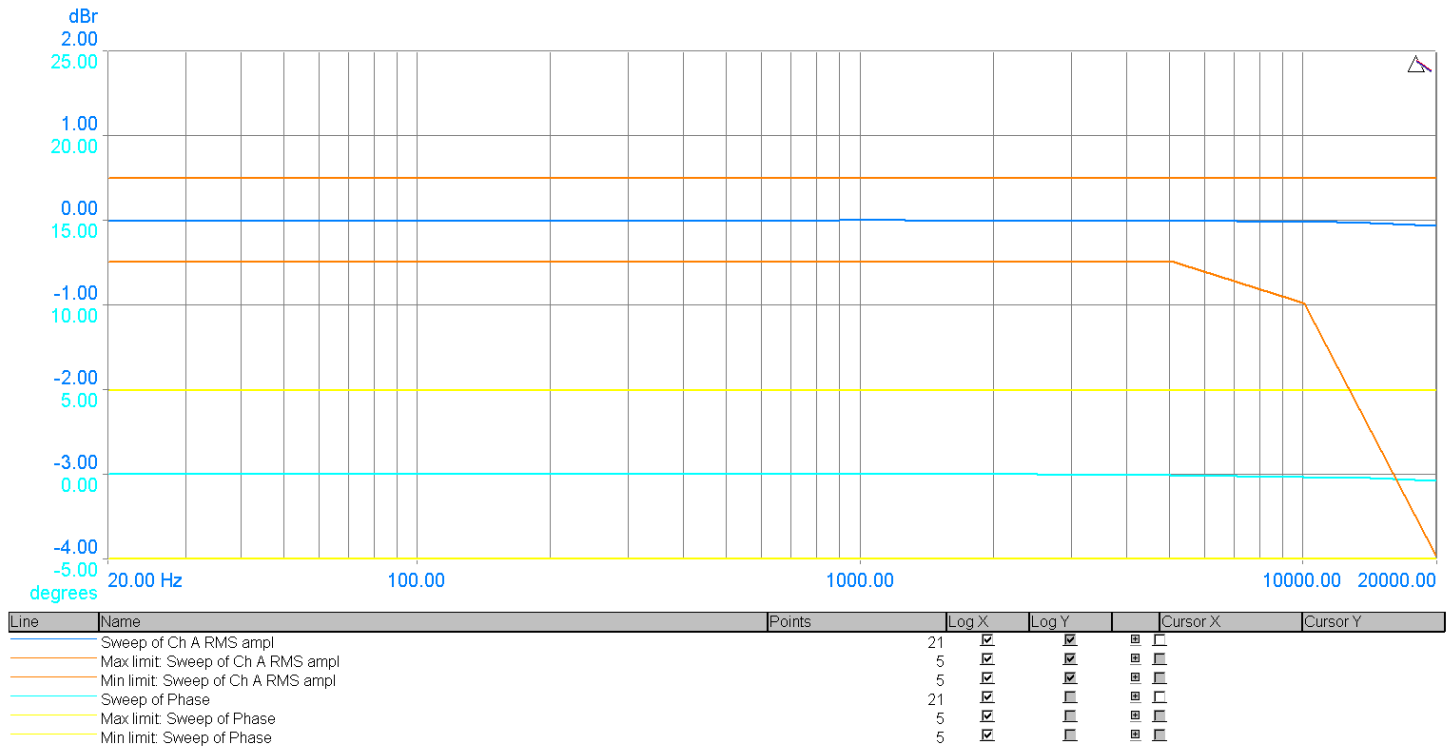
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A02 Ampl, Phase vs Freq: PASSED

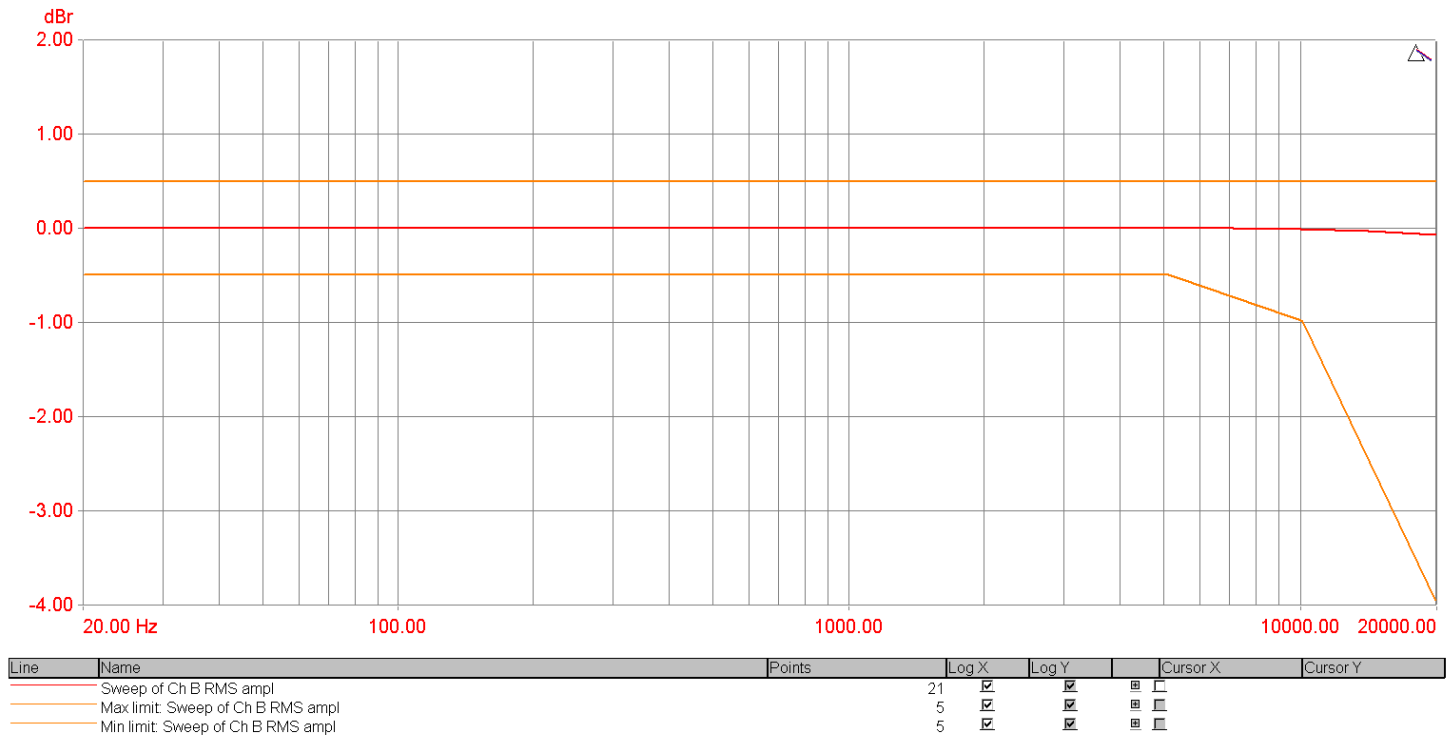
Measured at 1/21/2020 4:31:36 PM

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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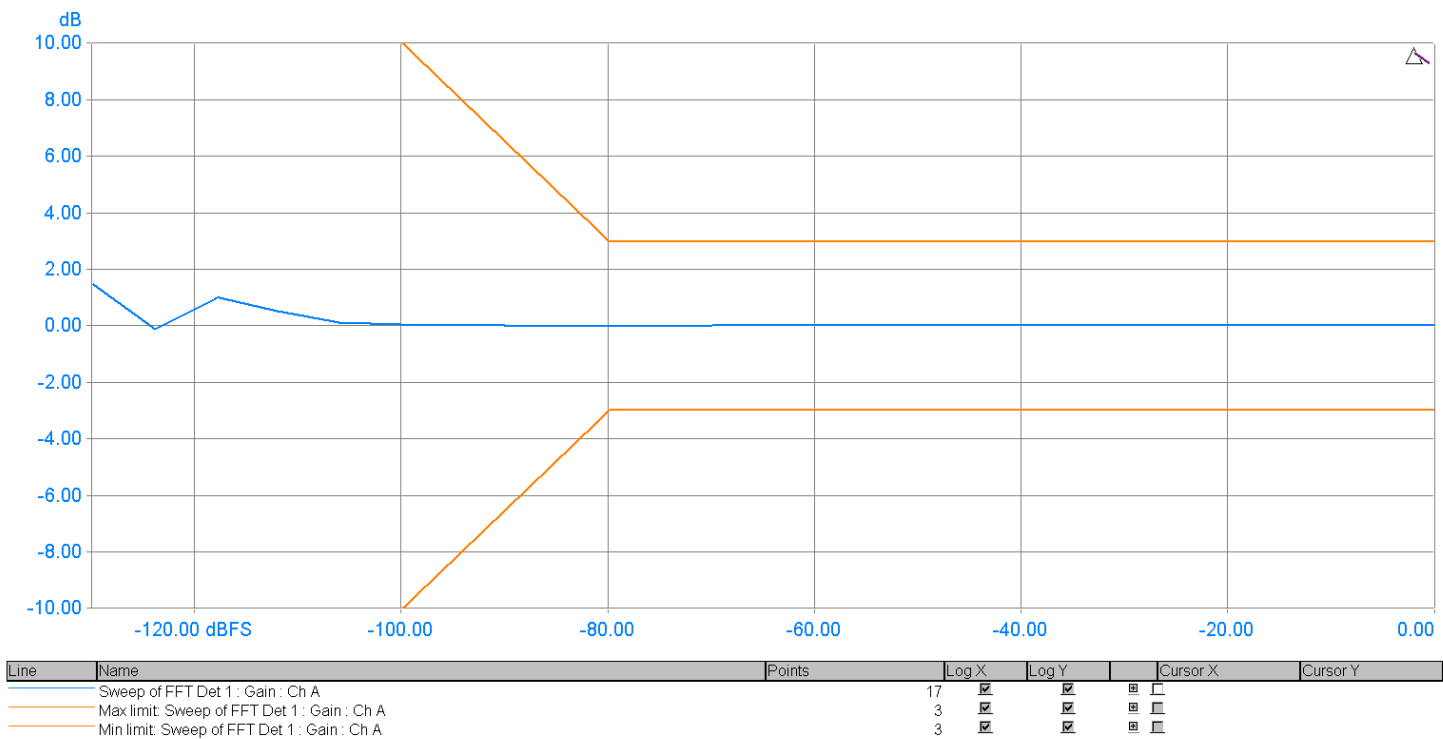
A03 Gain vs Ampl: PASSED

Measured at 1/21/2020 4:31:43 PM

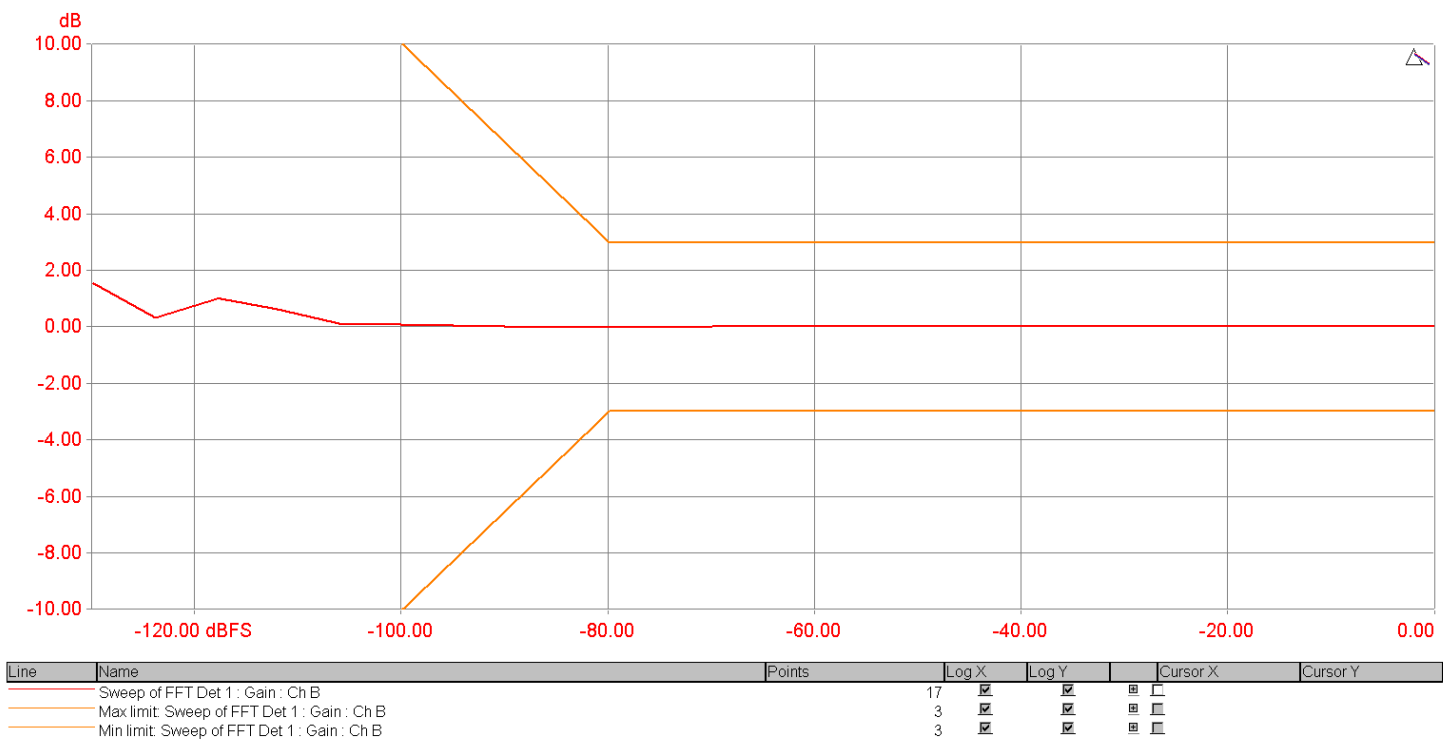
Generator Settings

Channel A: sine, -6 dBFS at 1000 Hz
Channel B: sine, -6 dBFS at 1000 Hz

Gain vs Amplitude



Gain vs Amplitude



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A04 THD+N,THD, nth-HD - analyzer comparison: PASSED

Measured at 1/21/2020 4:32:46 PM

Generator Settings

Channel A: sine, -3 dBFS at 999.023 Hz
Channel B: sine, -3 dBFS at 999.023 Hz

CTA Readings

THD+N - relative (Channel ARMS)

0.00271 % < 200 %
> 0 %

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

FFT Detector Readings		
THD (Channel A)	0.00234 %	< 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)	0.00181 %	< 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)	0.00029 %	< 200 % > 0 %
FFTD 3 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 3rd harmonic		

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A04 THD+N,THD, nth-HD: PASSED

Measured at 1/21/2020 4:32:49 PM

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

CTA Readings		
THD+N - relative (Channel A RMS)	0.00267 %	< 200 % > 0 %
THD+N - relative (Channel B RMS)	0.00310 %	< 200 % > 0 %
Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-reject filter at the generator frequency		

FFT Detector Readings		
THD (Channel A)	0.00231 %	< 200 % > 0 %
THD (Channel B)	0.00278 %	< 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)	0.00177 %	< 200 % > 0 %
2nd Harmonic Distortion (Channel B)	0.00227 %	< 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)	0.00029 %	< 200 % > 0 %
3rd Harmonic Distortion (Channel B)	0.00015 %	< 200 % > 0 %
FFTD 3 Settings: Self relative, 22 Hz - 22 kHz, unweighted with band-pass notch filter at the 3rd harmonic		

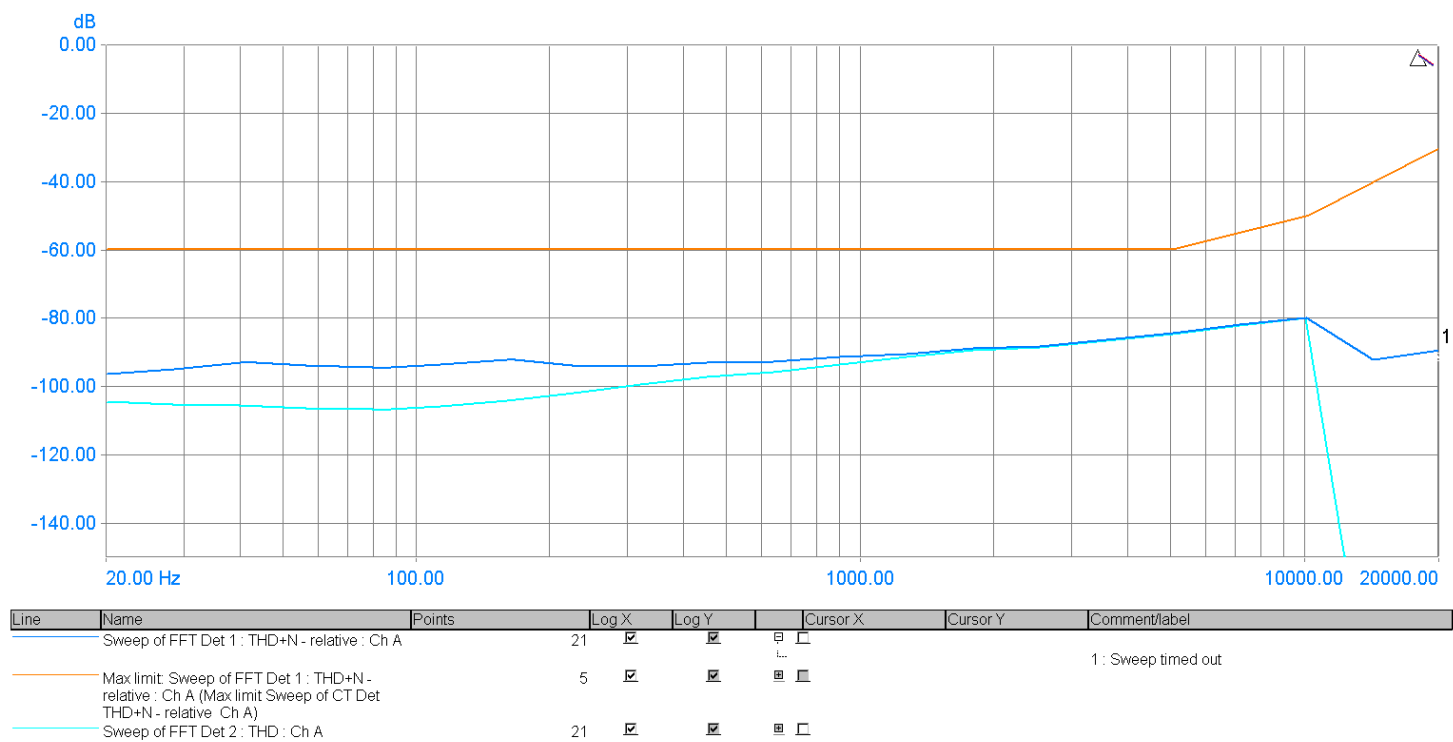
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A05 THD+N vs Freq: PASSED

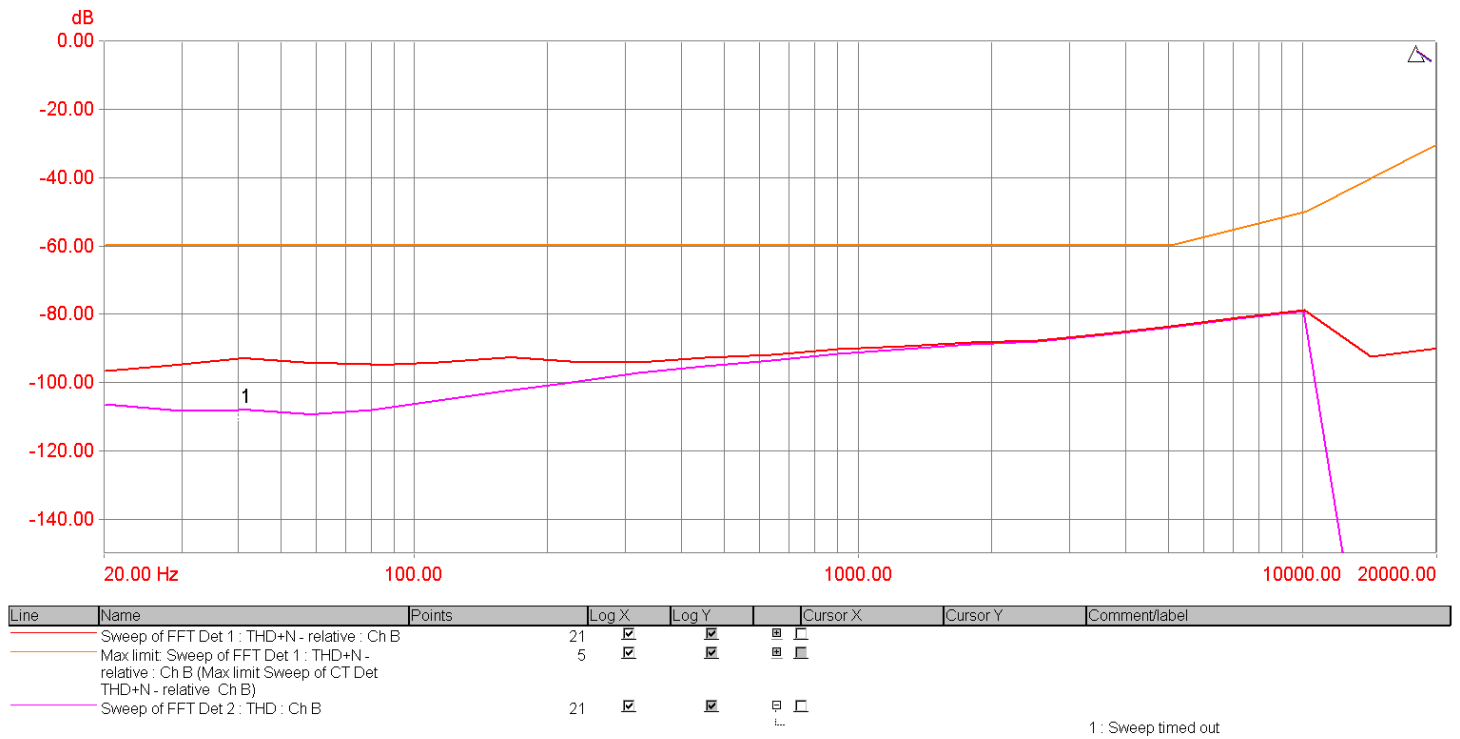
Measured at 1/21/2020 4:32:51 PM

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

THD+N vs Frequency



THD+N vs Frequency



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A06 THD+N vs Ampl: PASSED

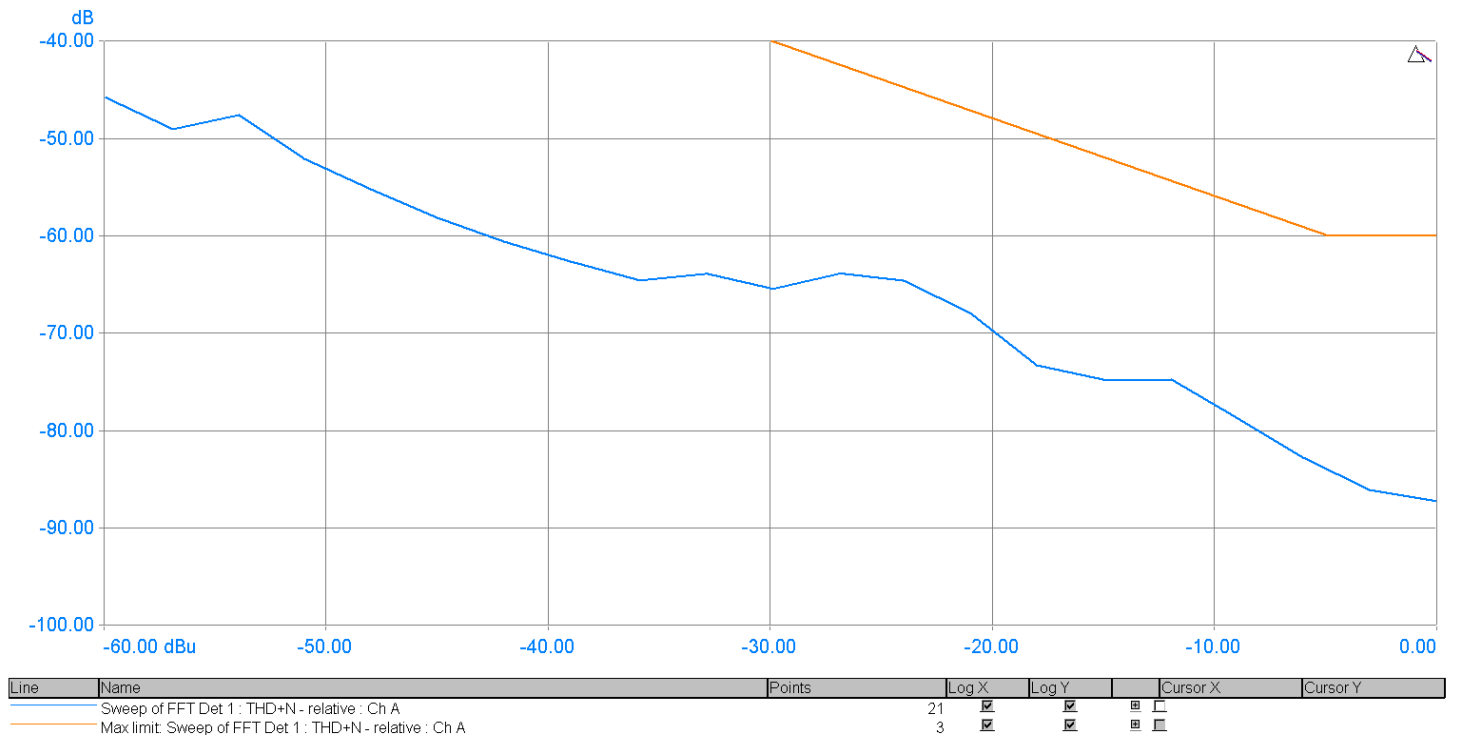
Measured at 1/21/2020 4:34:01 PM

Generator Settings

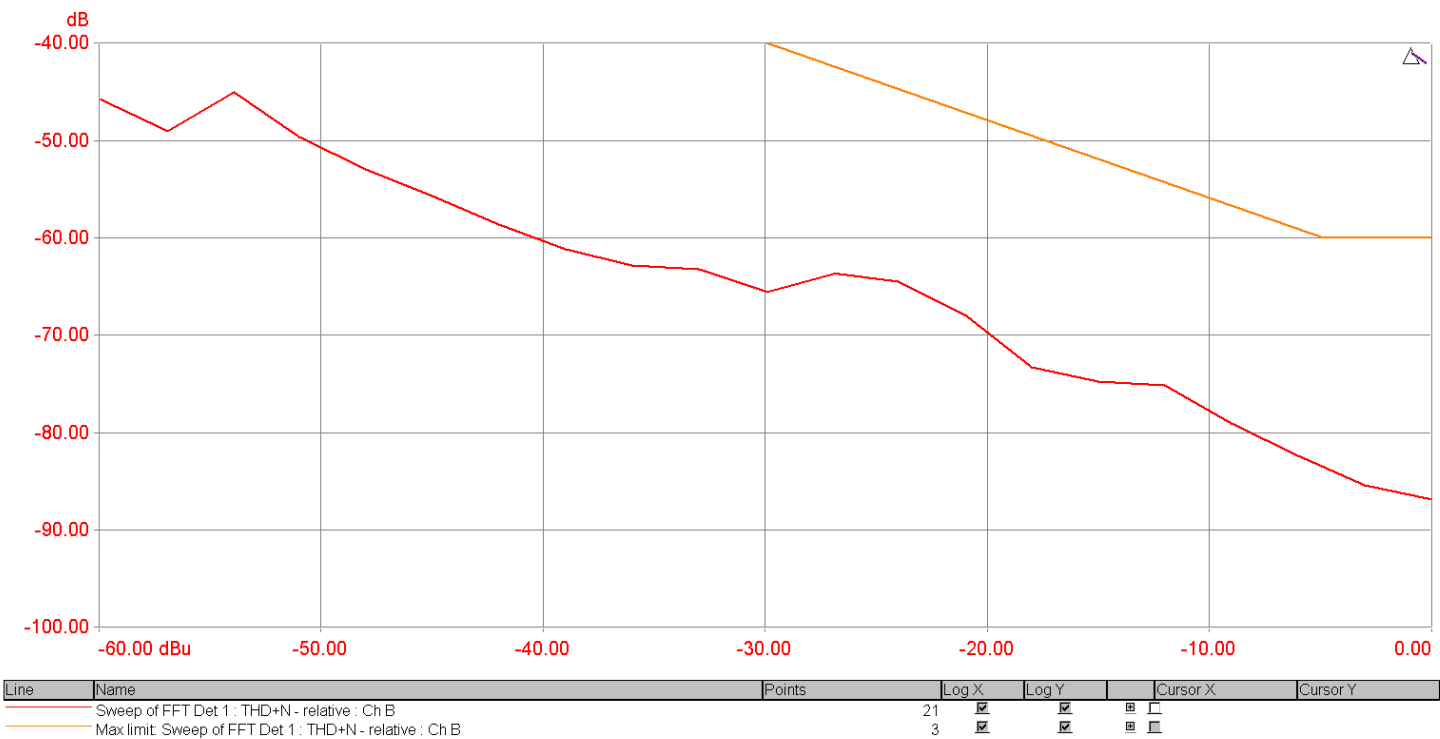
Channel A: sine, -3 dBFS at 1000 Hz

Channel B: sine, -3 dBFS at 1000 Hz

THD+N vs Amplitude



THD+N vs Amplitude



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A07 Noise, SNR: PASSED

Measured at 1/21/2020 4:34:26 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)	-102.921 dBr	Not limit checked.
Noise (unweighted) (Channel B)	-100.571 dBr	Not limit checked.
FFTD 1 Settings: 22 Hz - 22 kHz, unweighted with window notch (14 bins) band-reject filter at the generator frequency		
Noise (unweighted) (Channel A)	-103.011 dBr	Not limit checked.
Noise (unweighted) (Channel B)	-100.634 dBr	Not limit checked.
FFTD 2 Settings: 22 Hz - 22 kHz, unweighted with 1/3rd octave band-reject filter at the generator frequency		
User: DAC SNR Residual Async (Channel A)	111.208 dB	< 140 dB > 60 dB
User: DAC SNR Residual Async (Channel B)	108.899 dB	< 140 dB > 60 dB
FFTD 3 Settings: User: DAC SNR Residual Async		

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A08 Crosstalk A to B: PASSED

Measured at 1/21/2020 4:34:29 PM

Generator Settings

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

CTA Readings

Cross-talk (Channel B RMS)	-114.072 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 1/21/2020 4:34:33 PM

Generator Settings

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

CTA Readings

Cross-talk (Channel A RMS)	-119.314 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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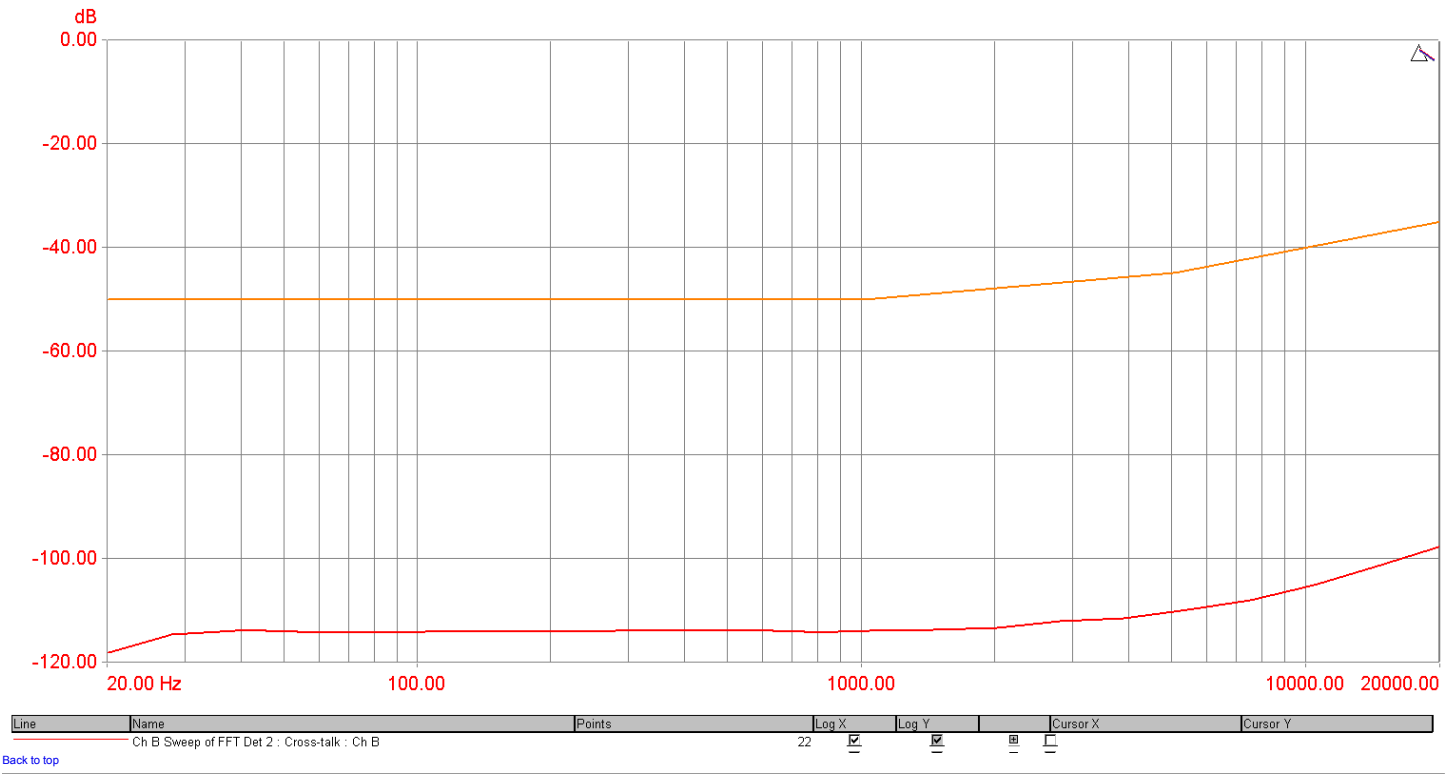
A10 Crosstalk A to B vs Freq: PASSED

Measured at 1/21/2020 4:34:35 PM

Generator Settings

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

Cross-talk A to B vs Frequency



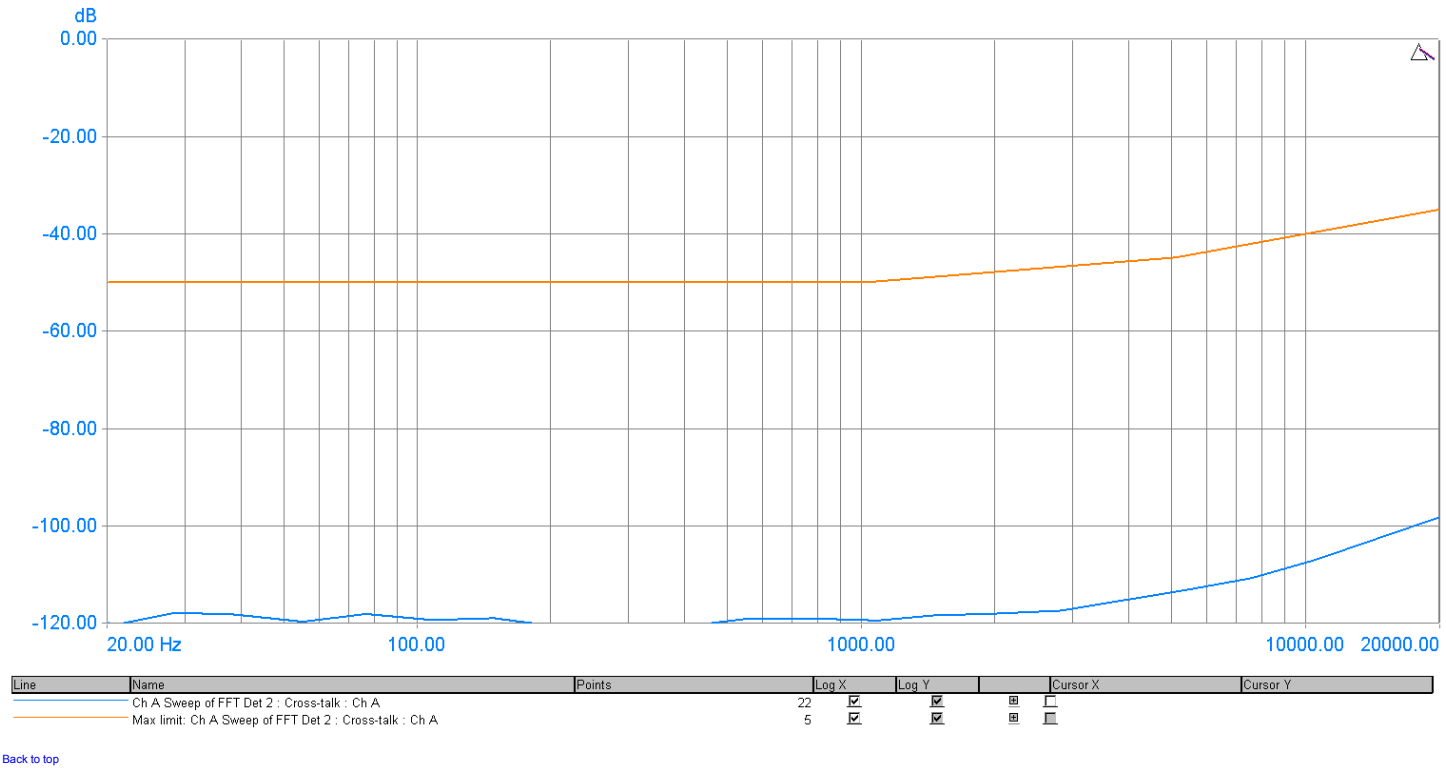
A11 Crosstalk B to A vs Freq: PASSED

Measured at 1/21/2020 4:35:29 PM

Generator Settings

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

Cross-talk A to B vs Frequency



A12 FFT 1000 Hz THD+N: PASSED

Measured at 1/21/2020 4:36:22 PM

Generator Settings

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

Signal Analyzer Readings

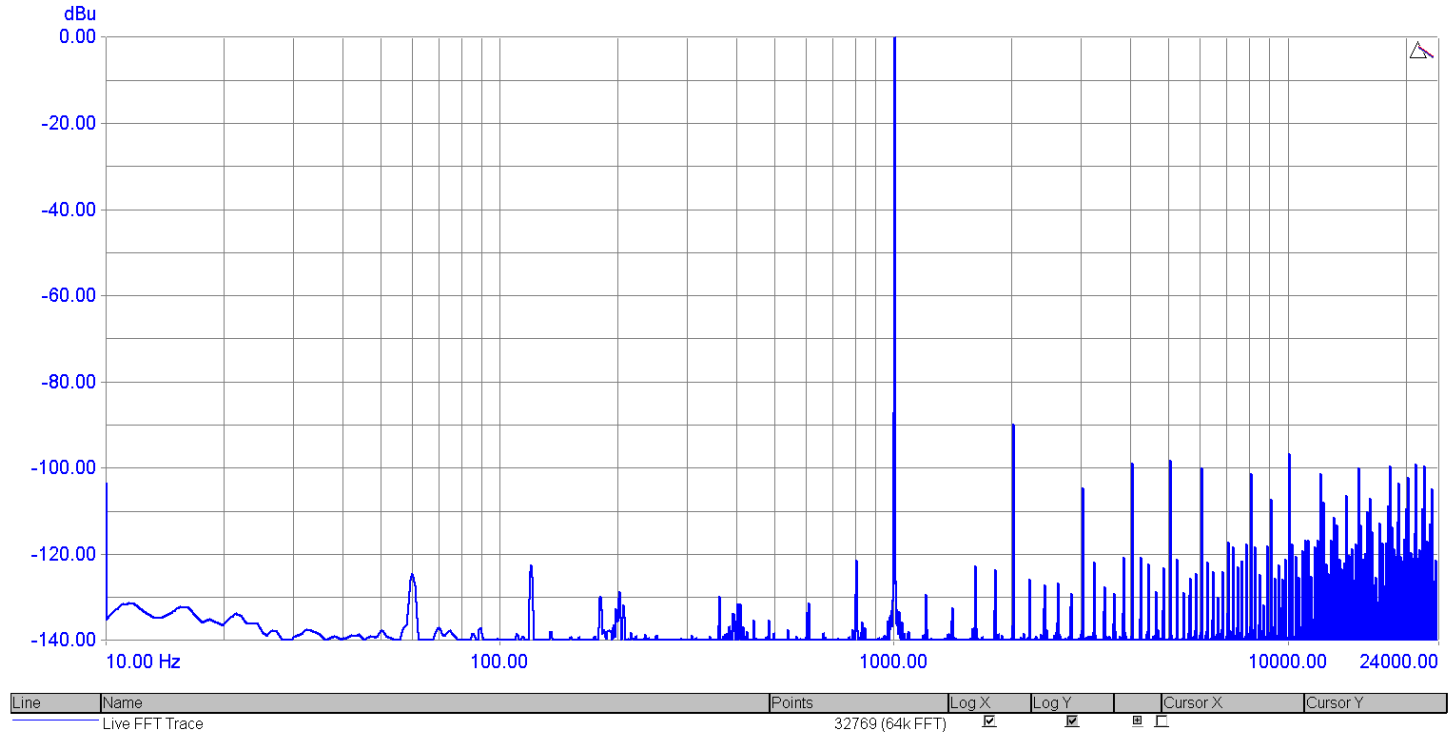
RMS amplitude (Selected : Ch A) 5.286 dBu Not limit checked.
RMS amplitude (Non-selected : Ch A) 5.284 dBu Not limit checked.

CTA Readings

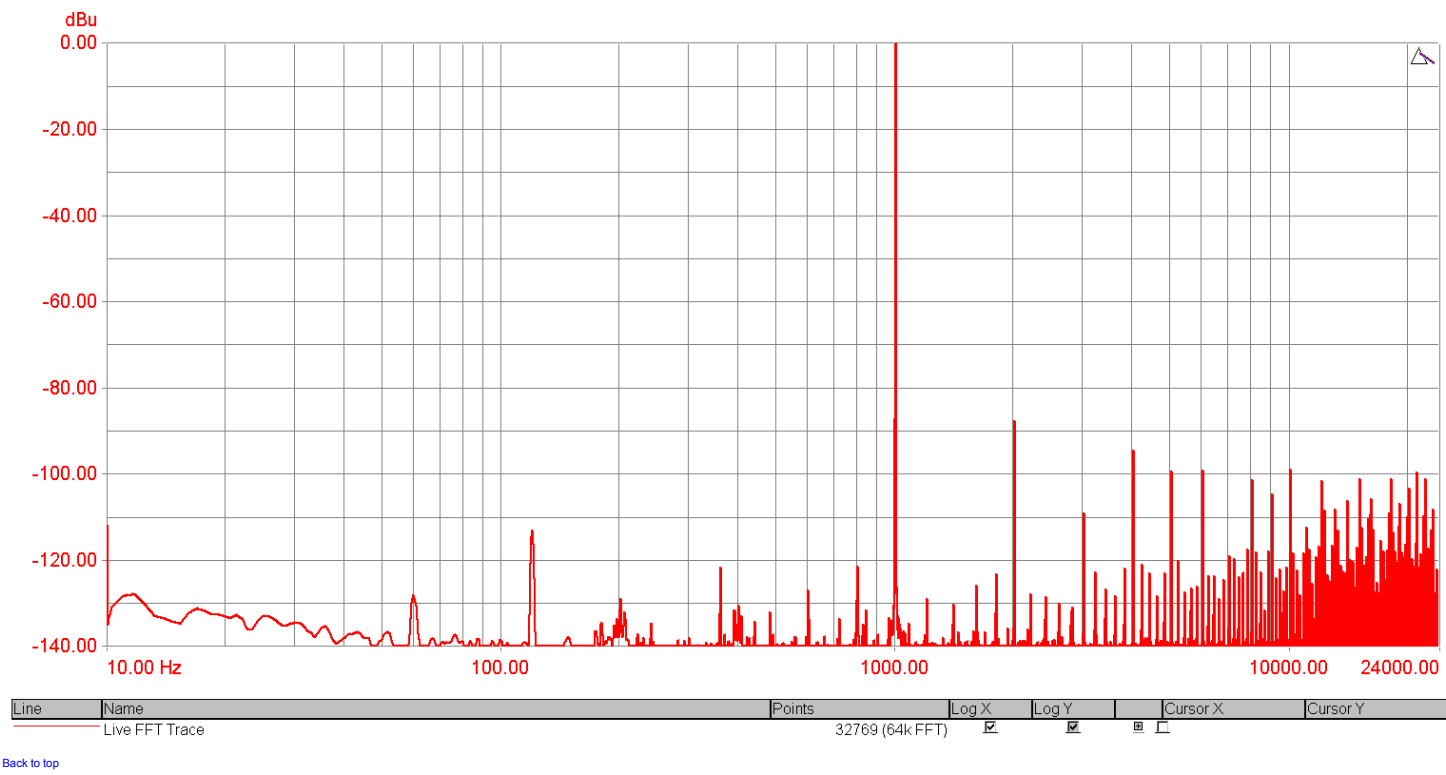
THD+N - relative (Selected : Ch A RMS) 0.00274 % < 0.075 %
THD+N - relative (Non-selected : Ch A RMS) 0.00307 % > 0.00000001 %

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



FFT 1000 Hz THD+N



A13 FFT 50+7000Hz: PASSED

Measured at 1/21/2020 4:36:45 PM

Generator Settings

Channel A: Twin-tone, -7 dBFS at 50 Hz and 1 amplitude ratio at 7000Hz
Channel B: Twin-tone, -7 dBFS at 50 Hz and 1 amplitude ratio at 7000Hz

Signal Analyzer Readings

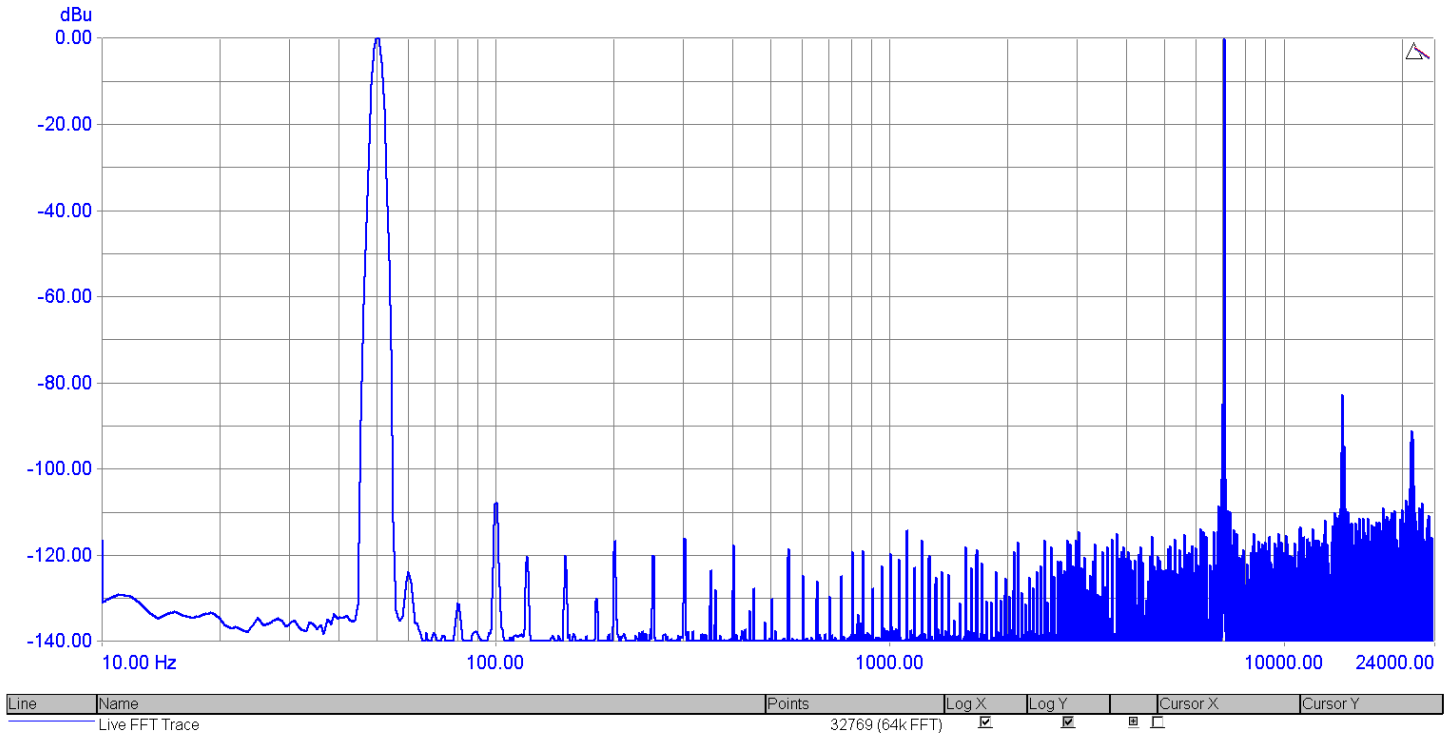
RMS amplitude (Channel A)	4.292 dBu	Not limit checked.
RMS amplitude (Channel B)	4.289 dBu	Not limit checked.

CTA Readings

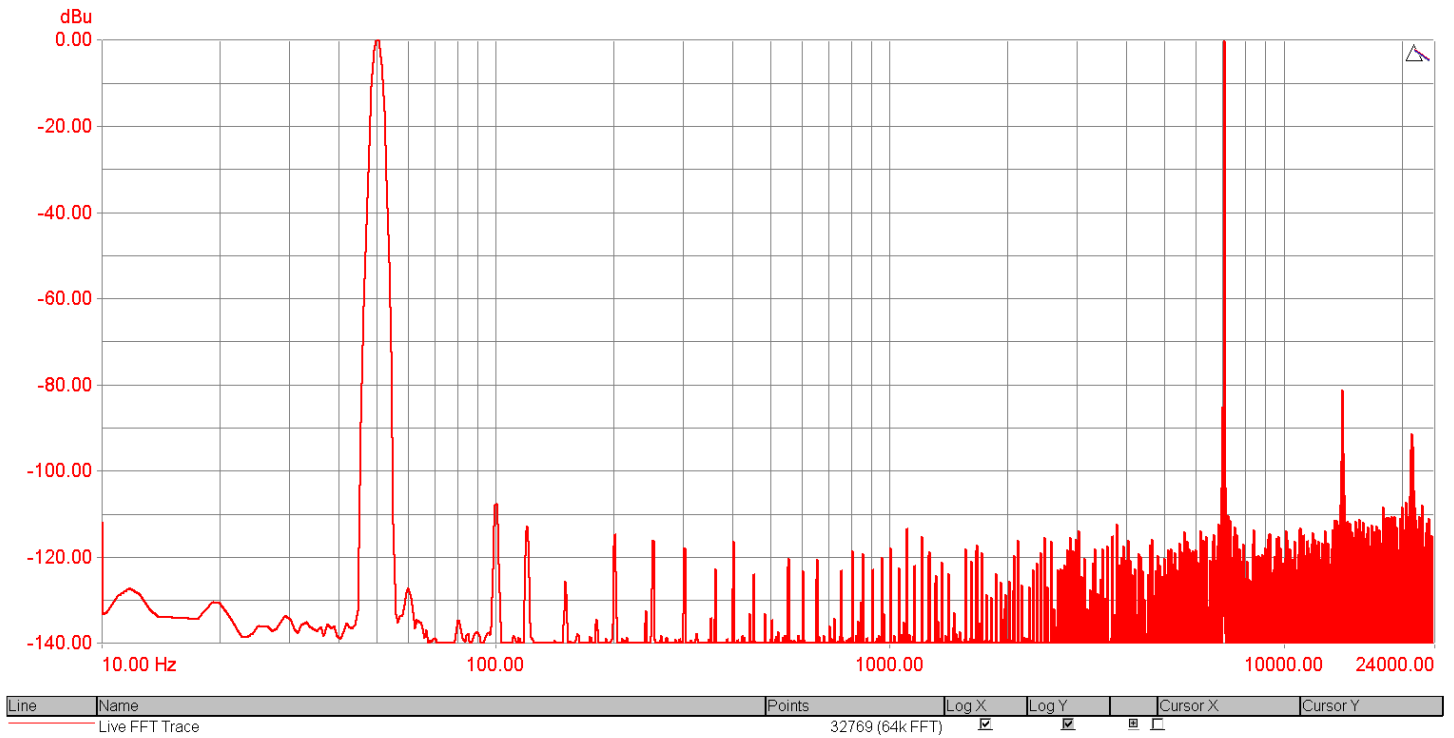
IMD SMPTE-DIN (Channel A RMS)	0.00099 %	< 0.05 % > 0 %
IMD SMPTE-DIN (Channel B RMS)	0.00112 %	< 0.05 % > 0 %

Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS using SMPTE-DIN IMD demodulation.

FFT 50 + 7000 Hz



FFT 50 + 7000 Hz



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A14 FFT 600+1700 Hz: PASSED

Measured at 1/21/2020 4:37:08 PM

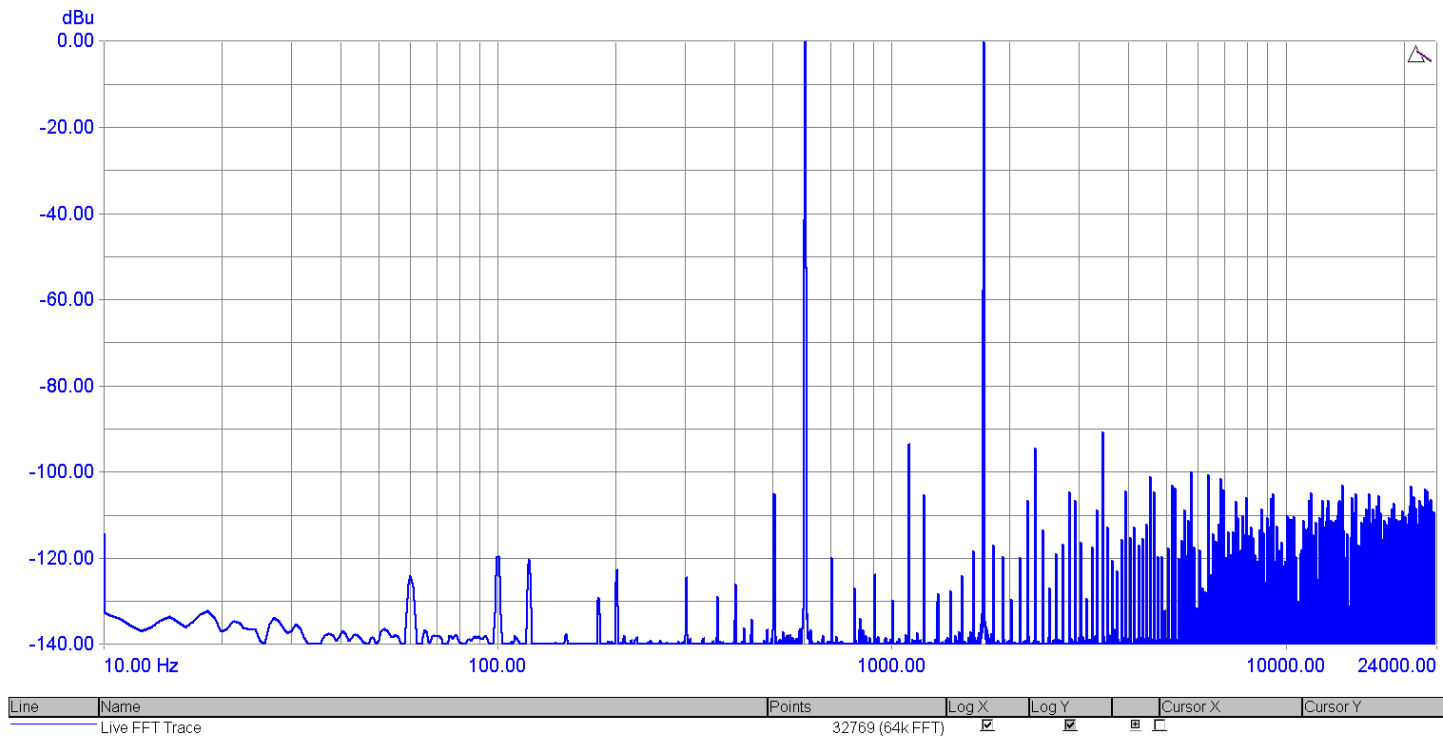
Generator Settings

Channel A: Twin-tone, -7 dBFS at 600 Hz and 1 amplitude ratio at 1700Hz
 Channel B: Twin-tone, -7 dBFS at 600 Hz and 1 amplitude ratio at 1700Hz

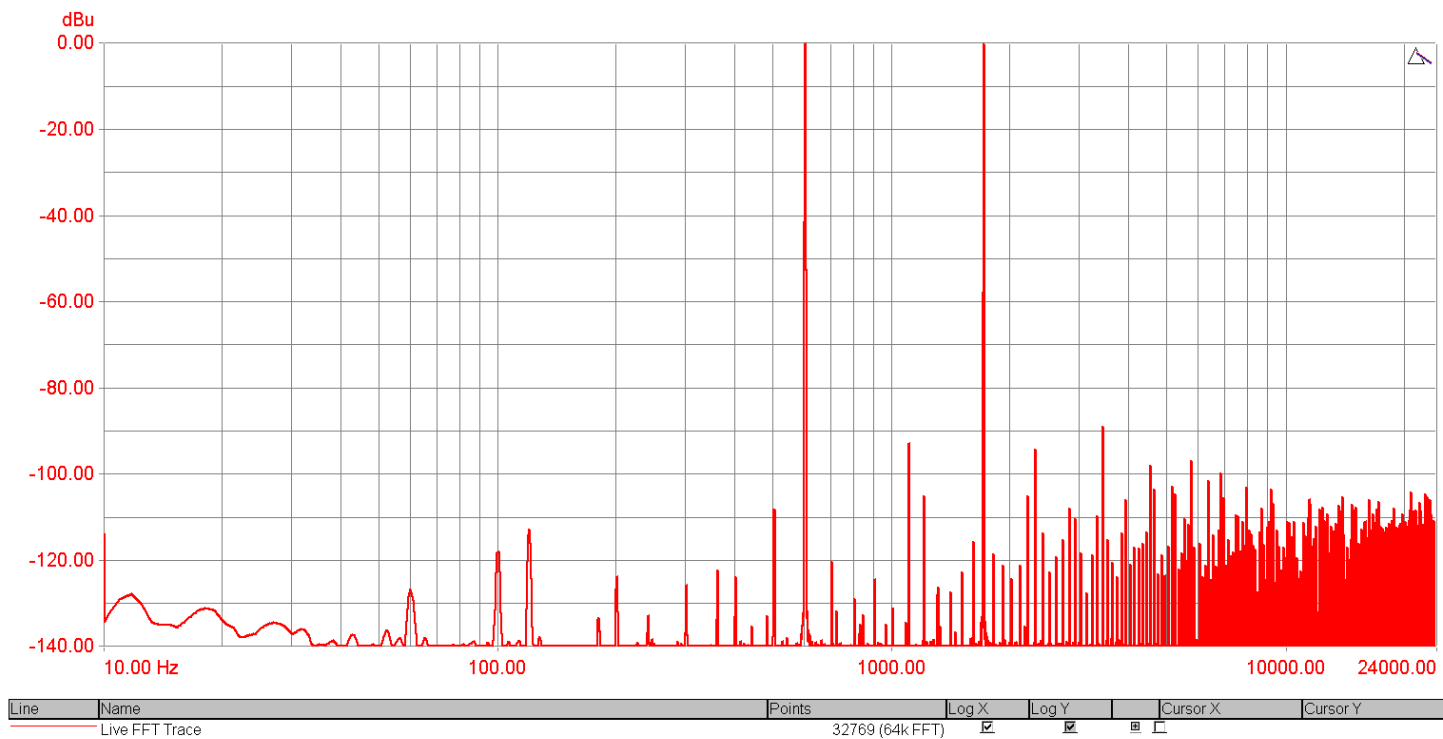
Signal Analyzer Readings

RMS amplitude (Channel A) 4.292 dBu Not limit checked.
 RMS amplitude (Channel B) 4.280 dBu Not limit checked.

FFT 600 + 1700 Hz



FFT 600 + 1700 Hz

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A15 FFT 19+20 KHz: PASSED

Measured at 1/21/2020 4:37:30 PM

Generator Settings

Channel A: Twin-tone, -6.03 dBFS at 19000 Hz and 0 dB offset at 1000 Hz offset
Channel B: Twin-tone, -6.03 dBFS at 19000 Hz and 0 dB offset at 1000 Hz offset

Signal Analyzer Readings

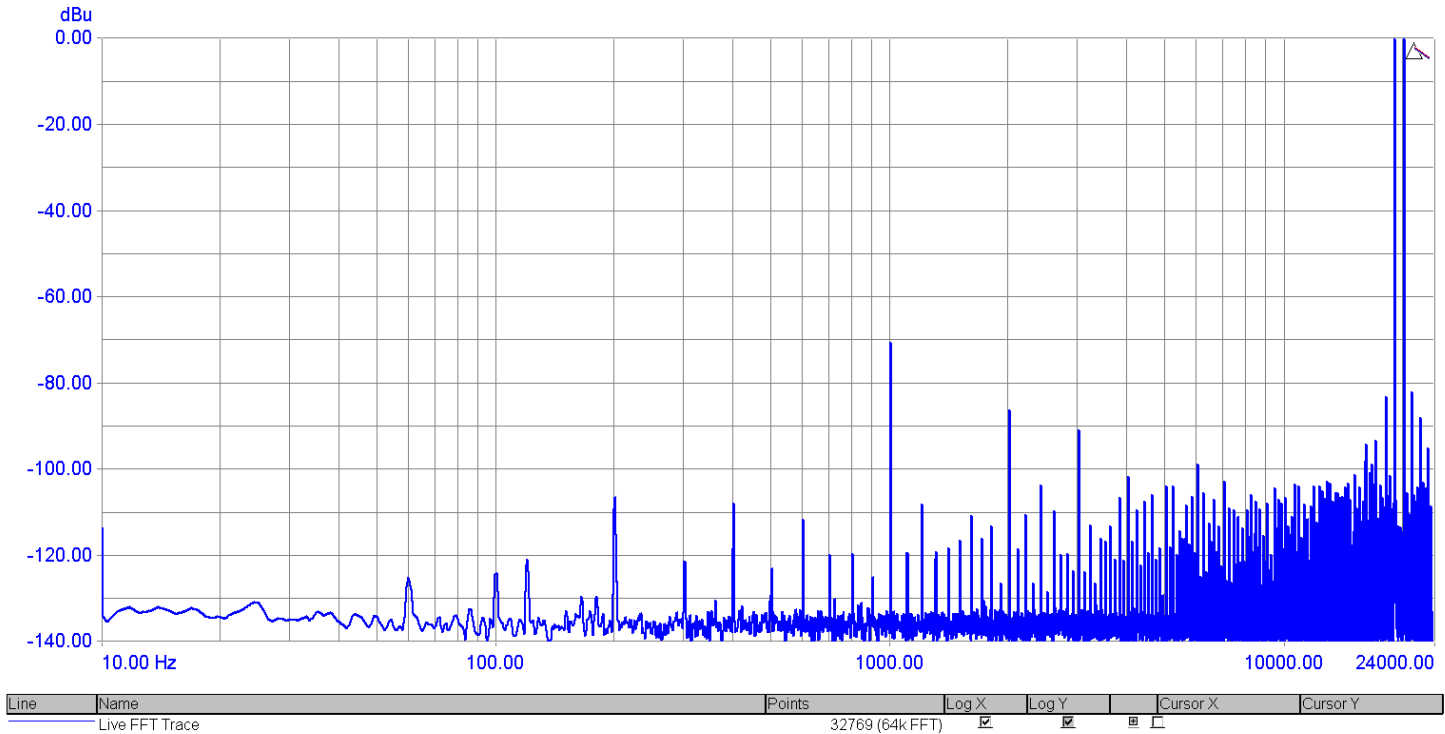
RMS amplitude (Channel A) 5.203 dBu Not limit checked.
RMS amplitude (Channel B) 5.183 dBu Not limit checked.

CTA Readings

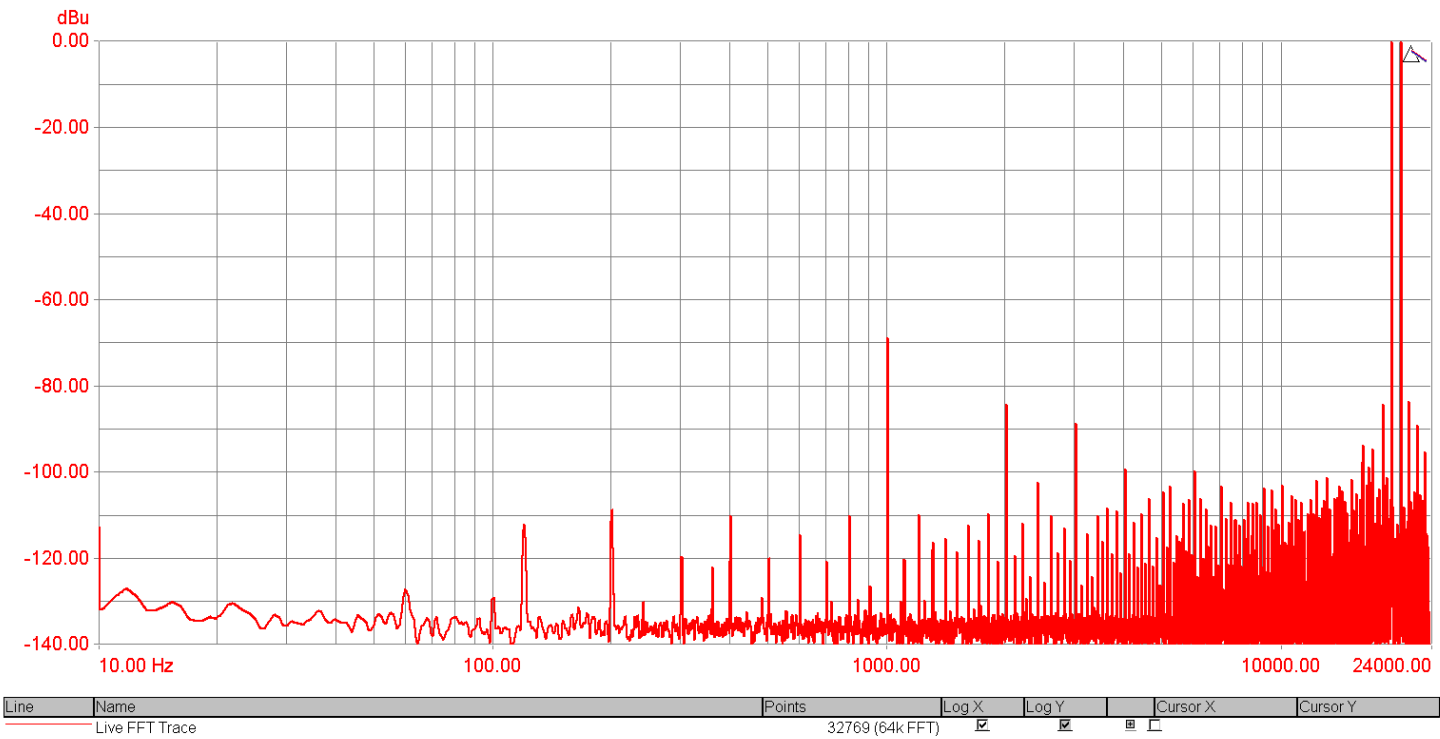
IMD CCIF (Channel A RMS) 0.01652 % < 0.1 %
IMD CCIF (Channel B RMS) 0.02004 % < 0.1 %

Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the intermodulation difference frequency

FFT 19 + 20 KHz



FFT 19 + 20 KHz



FFT Detector Readings

IMD CCIF (Channel A)	0.01652 %	< 0.1 %
IMD CCIF (Channel B)	0.01995 %	< 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 1/21/2020 4:37:55 PM

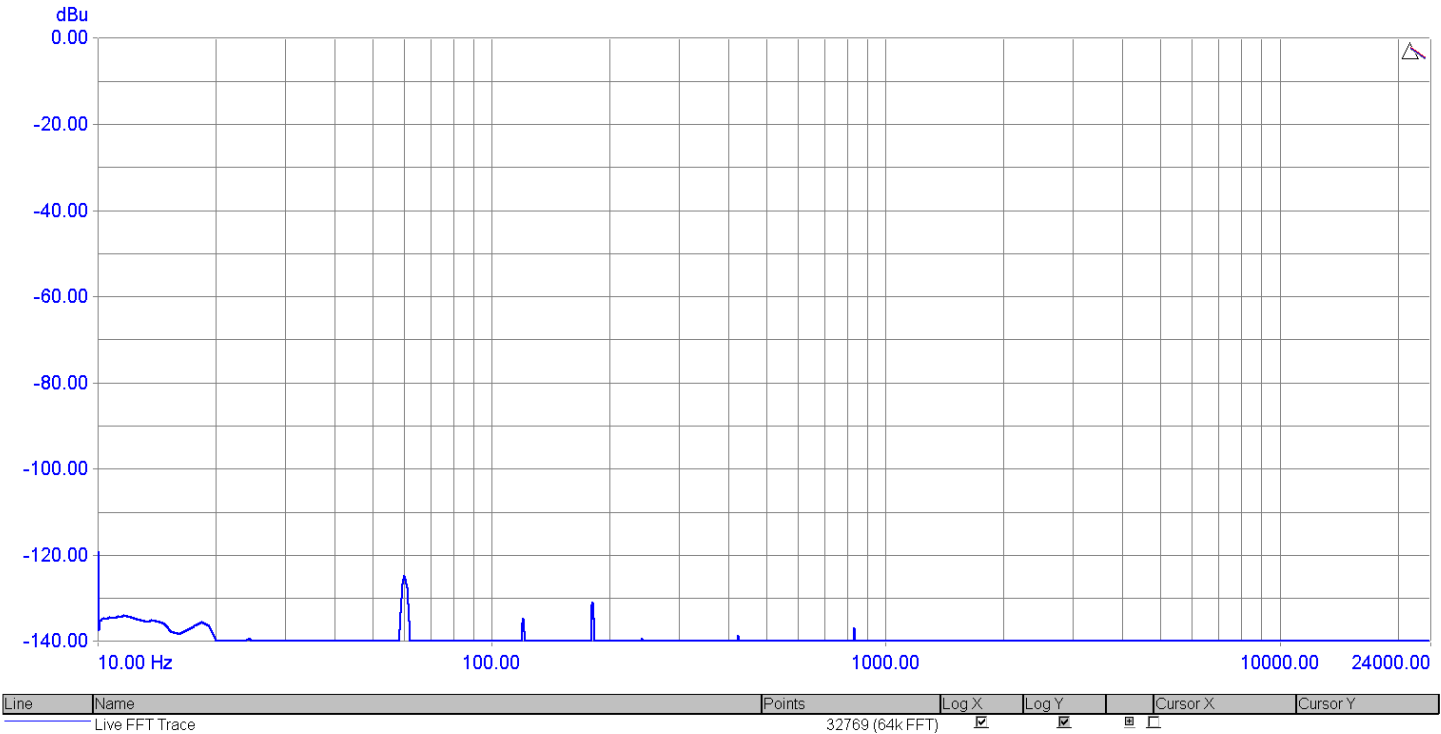
Generator Settings

Channel A:	Off
Channel B:	Off

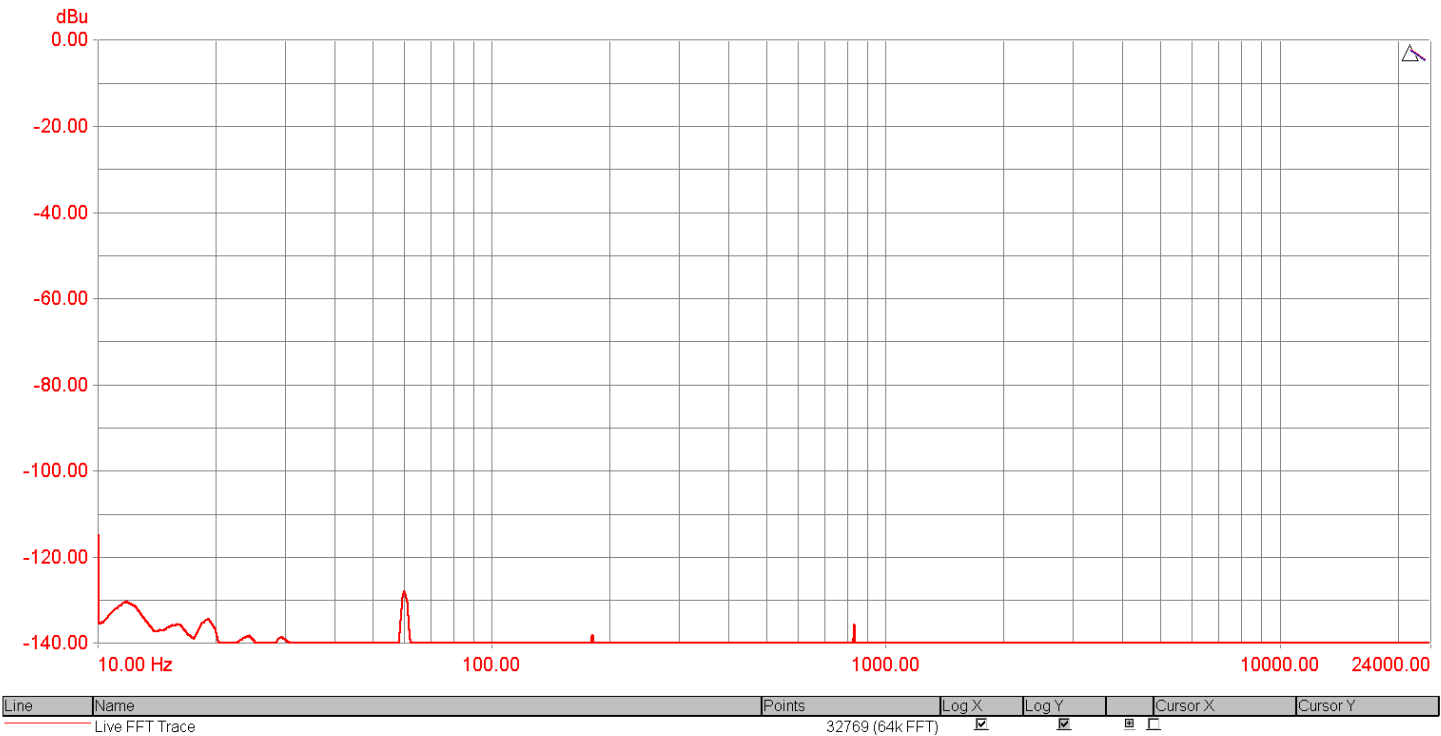
Signal Analyzer Readings

RMS amplitude (Channel A)	-105.750 dBu	Not limit checked.
RMS amplitude (Channel B)	-105.769 dBu	Not limit checked.

FFT residual noise



FFT residual noise



FFT Detector Readings

Noise (residual) (Channel A)	-114.486 dBFS	< -60 dBFS
Noise (residual) (Channel B)	-114.441 dBFS	> -150 dBFS
		< -60 dBFS
		> -150 dBFS

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

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A17 FFT -90 dBFS: Not limit checked.

Measured at 1/21/2020 4:38:18 PM

Generator Settings

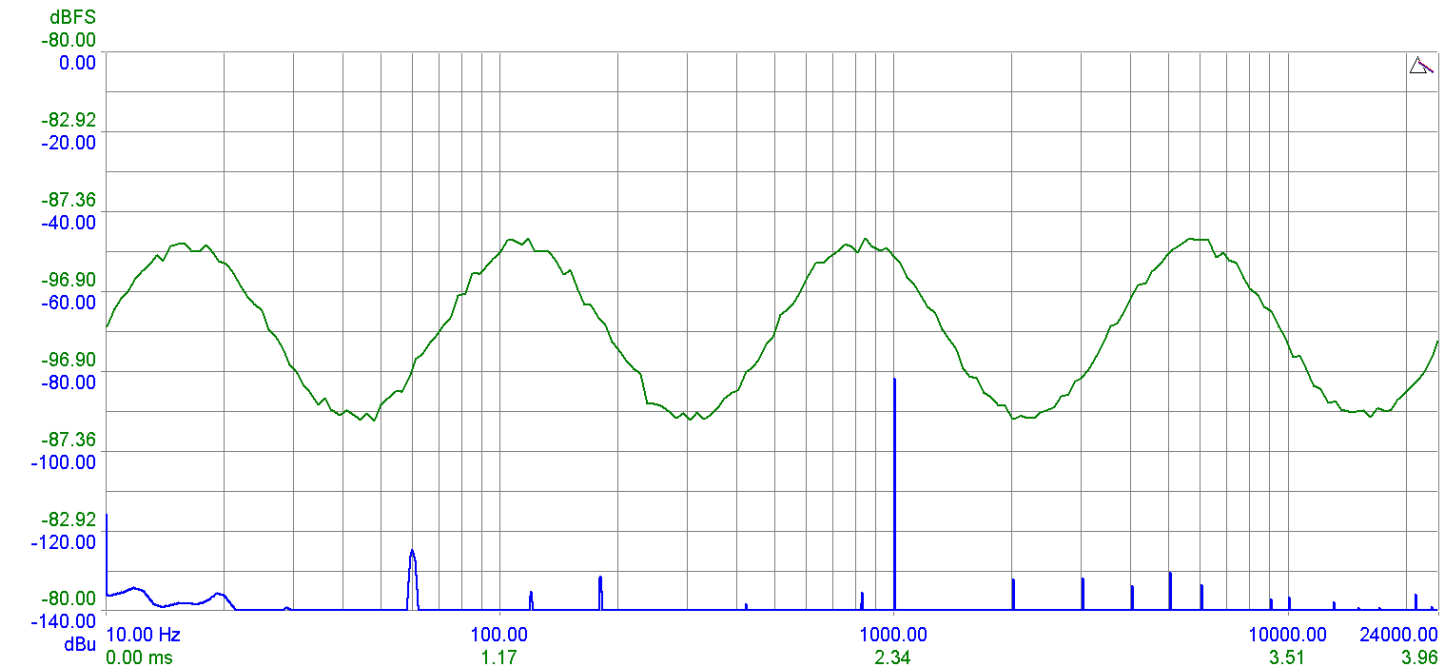
Channel A:	sine, -90 dBFS at 1000 Hz
Channel B:	sine, -90 dBFS at 1000 Hz

RMS amplitude (Selected : Ch A)

-81.757 dBu

Not limit checked.

FFT -90 dBFS



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y
1	Live Scope Trace	65536	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Live FFT Trace	32769 (64k FFT)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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A18 FFT -90 dBFS 16 bit: Not limit checked.

Measured at 1/21/2020 4:38:31 PM

Generator Settings

Channel A: sine, -90 dBFS at 1000 Hz
Channel B: sine, -90 dBFS at 1000 Hz

RMS amplitude (Selected : Ch A)

-81.347 dBu

Not limit checked.

FFT -90 dBFS



Line	Name	Points	Log X	Log Y	Cursor X	Cursor Y
1	Live Scope Trace	65536	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
2	Live FFT Trace	32769 (64k FFT)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

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A19 FFT imaging: Not limit checked.

Measured at 1/21/2020 4:38:45 PM

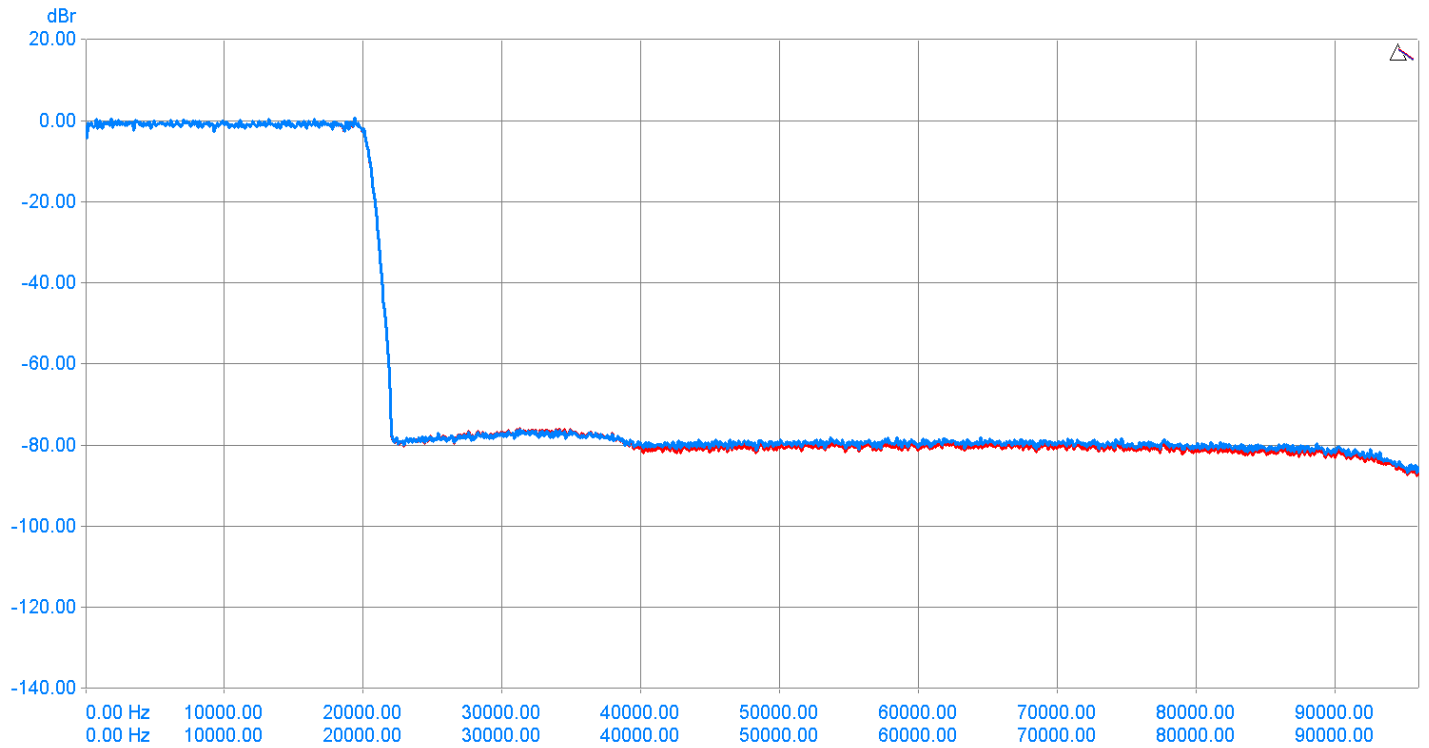
Generator Settings

Channel A:

white noise, -6 dBFS

Channel B:

white noise, -6 dBFS (inverted)



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A20 FFT inferred jitter: Not limit checked.

Generator Settings

Channel A:

sine, -6 dBFS at 11025 Hz

Channel B:

sine, -6 dBFS at 11025 Hz (inverted)

