# dac2541 AES 44K Bal Lin 160dBFS 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 | √ |
| A05 THD+N vs Freq | √ |
| A06 THD+N vs Ampl | √ |
| A07 Noise, DNR | √ |
| 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 |
| A17a FFT -120 dBFS | OK |
| A18 FFT -90 dBFS 16 bit | OK |
| A19 FFT imaging | OK |
| A20 FFT inferred jitter | OK |

**KEY:** √ = Test passes, X = Test fails, OK = Test has run but has no limit checking, (X) = Test has failed to run or has not completed,
[√] = 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 Ampl, Phase, Gain: PASSED

Measured at 3/17/2021 12:23:03 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) | 13.502 dBu | < 24 dBu<br>> -20 dBu |
| RMS amplitude (Channel B) | 13.505 dBu | < 24 dBu<br>> -20 dBu |
| Inter-channel phase | -0.02 ° | < 10 °<br>> -10 ° |

| CTA Readings | | |
|---|---|---|
| Gain (Channel A RMS) | -0.001 dB | < 20 dB<br>> -40 dB |
| Gain (Channel B RMS) | 0.001 dB | < 20 dB<br>> -40 dB |

**Settings:** Generator relative, 22 Hz - 22 kHz, unweighted RMS with 1/3rd octave band-pass filter at the generator frequency
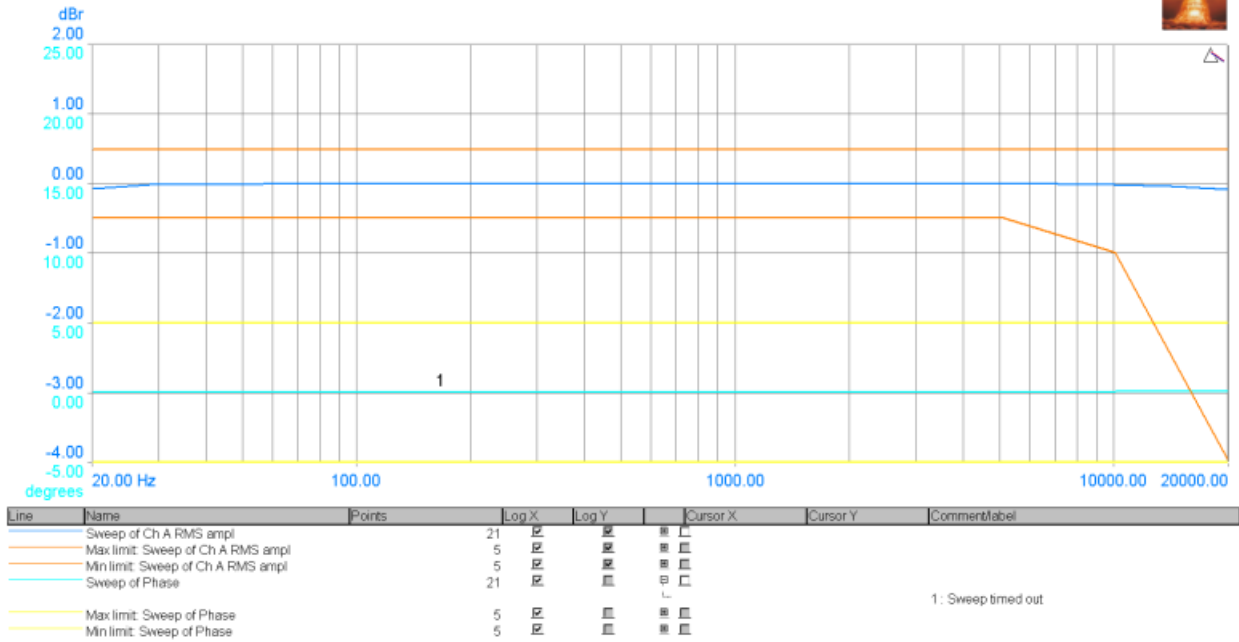
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## A02 Ampl, Phase vs Freq: PASSED
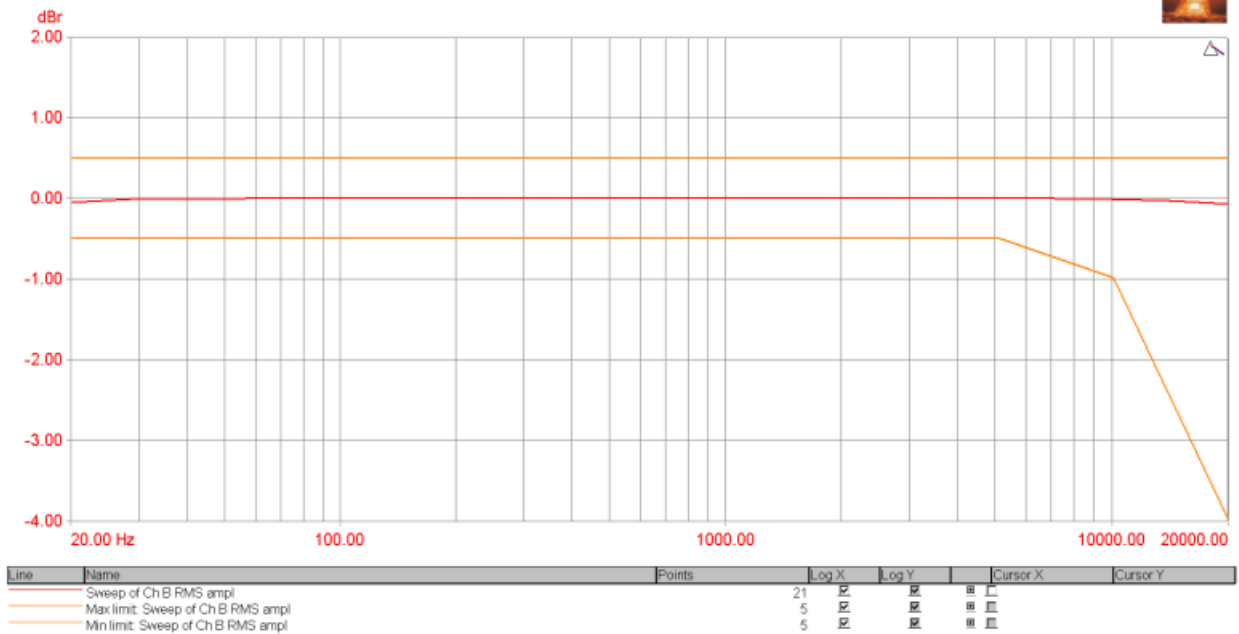
Measured at 3/17/2021 12:23:06 PM

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

## Frequency Response and Inter-channel Phase



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y | Comment/label |
|---|---|---|---|---|---|---|---|
| | Sweep of Ch A RMS ampl | 21 | ☑ | ☑ | ▦ ☐ | | |
| | Max limit: Sweep of Ch A RMS ampl | 5 | ☑ | ☑ | ▦ ☐ | | |
| | Min limit: Sweep of Ch A RMS ampl | 5 | ☑ | ☑ | ▦ ☐ | | |
| | Sweep of Phase | 21 | ☑ | ☐ | ⊟ ☐ | | |
| | | | | | | | 1 : Sweep timed out |
| | Max limit: Sweep of Phase | 5 | ☑ | ☐ | ▦ ☐ | | |
| | Min limit: Sweep of Phase | 5 | ☑ | ☐ | ▦ ☐ | | |

## Frequency Response and Inter-channel Phase



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Sweep of Ch B RMS ampl | 21 | ☑ | ☑ | ▦ ☐ | |
| | Max limit: Sweep of Ch B RMS ampl | 5 | ☑ | ☑ | ▦ ☐ | |
| | Min limit: Sweep of Ch B RMS ampl | 5 | ☑ | ☑ | ▦ ☐ | |

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### A03 Gain vs Ampl: PASSED

Measured at 3/17/2021 12:23:15 PM
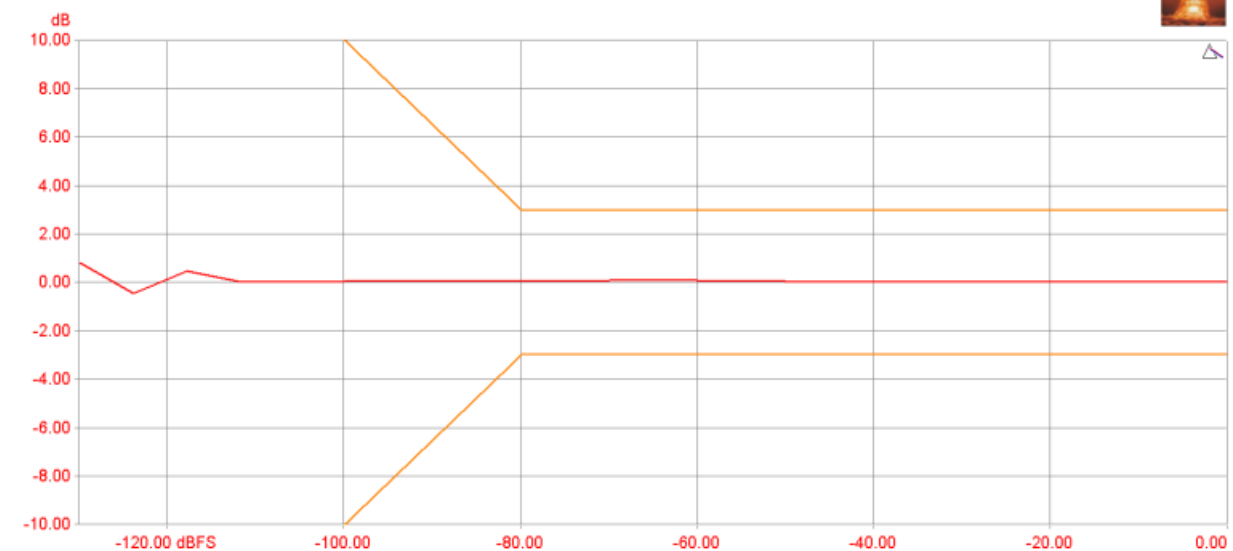
| Generator Settings | |
|---|---|
| Channel A: | sine, -6 dBFS at 1000 Hz |
| Channel B: | sine, -6 dBFS at 1000 Hz |

## Gain vs Amplitude



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Sweep of FFT Det 1 : Gain : Ch A | 17 | ☑ | ☑ | | |
| | Max limit: Sweep of FFT Det 1 : Gain : Ch A | 3 | ☑ | ☑ | | |
| | Min limit: Sweep of FFT Det 1 : Gain : Ch A | 3 | ☑ | ☑ | | |

## Gain vs Amplitude



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Sweep of FFT Det 1 : Gain : Ch B | 17 | ☑ | ☑ | | |
| | Max limit: Sweep of FFT Det 1 : Gain : Ch B | 3 | ☑ | ☑ | | |
| | Min limit: Sweep of FFT Det 1 : Gain : Ch B | 3 | ☑ | ☑ | | |

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

Measured at 3/17/2021 12:24:18 PM

| Generator Settings | |
|---|---|
| Channel A: | sine, 0 dBFS at 1000 Hz |
| Channel B: | sine, 0 dBFS at 1000 Hz |

| CTA Readings | | |
|---|---|---|
| THD+N - relative (Channel A RMS) | 0.00181 % | < 200 % > 0 % |
| THD+N - relative (Channel B RMS) | 0.00323 % | < 200 % > 0 % |

**Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted RMS with 1/12th octave band-reject filter at the generator frequency
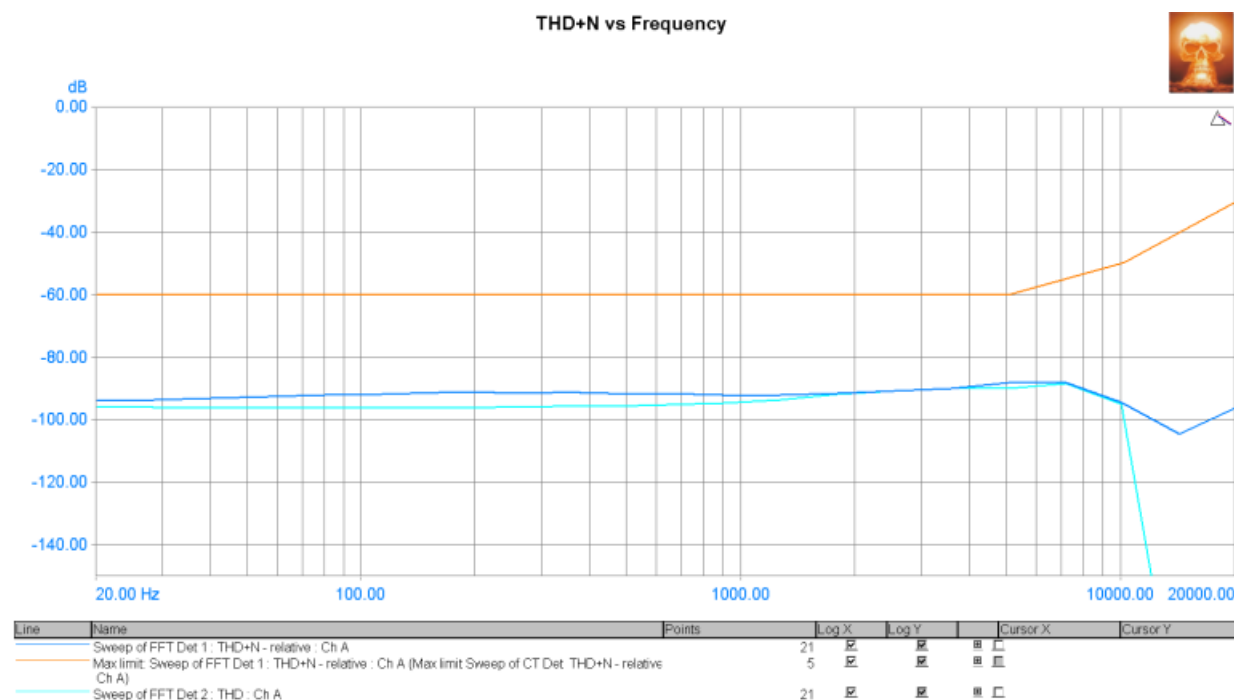
| | | |
|---|---|---|
| THD (Channel A) | 0.00156 % | < 200 %<br>> 0 % |
| THD (Channel B) | 0.00311 % | < 200 %<br>> 0 % |

**FFTD 1 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with band-pass notch filters from the 2nd to 10th harmonics

| | | |
|---|---|---|
| 2nd Harmonic Distortion (Channel A) | 0.00127 % | < 200 %<br>> 0 % |
| 2nd Harmonic Distortion (Channel B) | 0.00294 % | < 200 %<br>> 0 % |

**FFTD 2 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with band-pass notch filter at the 2nd harmonic

| | | |
|---|---|---|
| 3rd Harmonic Distortion (Channel A) | 0.00044 % | < 200 %<br>> 0 % |
| 3rd Harmonic Distortion (Channel B) | 0.00062 % | < 200 %<br>> 0 % |

**FFTD 3 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with band-pass notch filter at the 3rd harmonic

| | | |
|---|---|---|
| THD+N - relative (Channel A) | 0.00177 % | < 200 %<br>> 0 % |
| THD+N - relative (Channel B) | 0.00322 % | < 200 %<br>> 0 % |

**FFTD 4 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with window notch (14 bins) band-reject filter at the input frequency
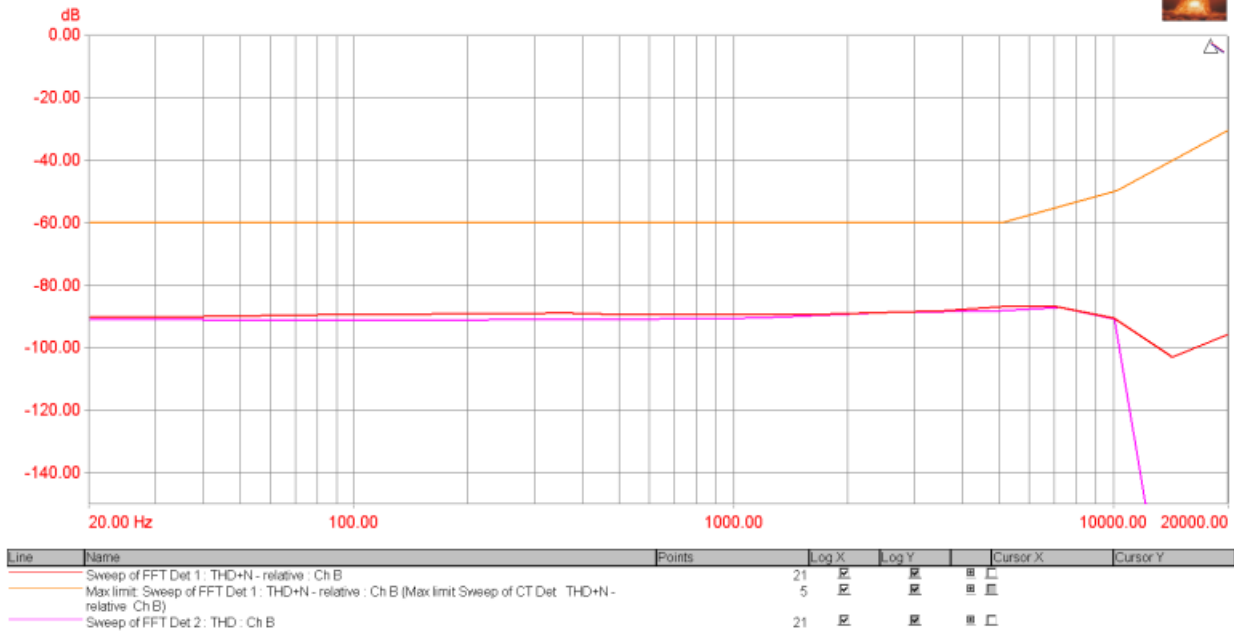
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## A05 THD+N vs Freq: PASSED

Measured at 3/17/2021 12:24:30 PM

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



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Sweep of FFT Det 1 : THD+N - relative : Ch A | 21 | ☑ | ☑ | ⊞ ☐ | |
| | Max limit: Sweep of FFT Det 1 : THD+N - relative : Ch A (Max limit Sweep of CT Det THD+N - relative Ch A) | 5 | ☑ | ☑ | ⊞ ☐ | |
| | Sweep of FFT Det 2 : THD : Ch A | 21 | ☑ | ☑ | ⊞ ☐ | |

### THD+N vs Frequency



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Sweep of FFT Det 1 : THD+N - relative : Ch B | 21 | ☑ | ☑ | ☐ | ☐ |
| | Max limit: Sweep of FFT Det 1 : THD+N - relative : Ch B (Max limit Sweep of CT Det  THD+N - relative  Ch B) | 5 | ☑ | ☑ | ☐ | ☐ |
| | Sweep of FFT Det 2 : THD : Ch B | 21 | ☑ | ☑ | ☐ | ☐ |

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### A06 THD+N vs Ampl: PASSED

Measured at 3/17/2021 12:25:26 PM

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

### THD+N vs Amplitude



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Ch A Sweep of FFT Det 1 : THD+N - relative : Ch A | 21 | ☑ | ☑ | ☐ | ☐ |
| | Max limit: Ch A Sweep of FFT Det 1 : THD+N - relative : Ch A | 3 | ☑ | ☑ | ☐ | ☐ |
| | Ch B Sweep of FFT Det 1 : THD+N - relative : Ch B | 21 | ☑ | ☑ | ☐ | ☐ |
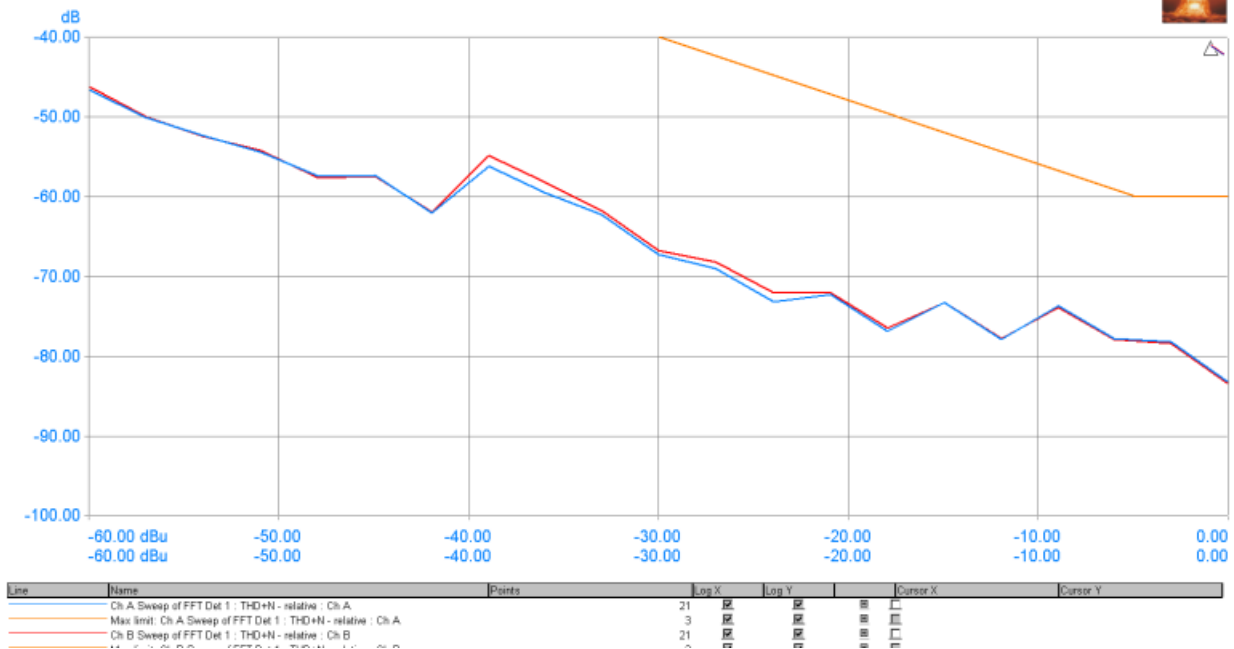
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### A07 Noise, DNR: PASSED

Measured at 3/17/2021 12:25:50 PM

| Generator Settings | |
|---|---|
| Channel A: | sine, -60 dBFS at 1000.488 Hz |
| Channel B: | sine, -60 dBFS at 1000.488 Hz |

| FFT Detector Readings | | |
|---|---|---|
| THD+N - relative (Channel A) | -57.771 dB | Not limit checked. |
| THD+N - relative (Channel B) | -57.944 dB | Not limit checked. |
| **FFTD 1 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with 1/3rd octave band-reject filter at the generator frequency | | |
| Noise (residual) (Channel A) | -112.271 dBu | Not limit checked. |
| Noise (residual) (Channel B) | -112.145 dBu | Not limit checked. |
| **FFTD 2 Settings:** 22 Hz - 22 kHz, unweighted with band-reject notch filters, fundamental to the 10th harmonic | | |
| DAC DNR Residual Async | 125.800 dB | < 150 dB > 60 dB |
| DAC DNR Residual Async | 125.676 dB | < 150 dB > 60 dB |
| **FFTD 3 Settings:** User: DAC SNR Residual Async | | |

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## A08 Crosstalk A to B: PASSED

Measured at 3/17/2021 12:26:08 PM

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

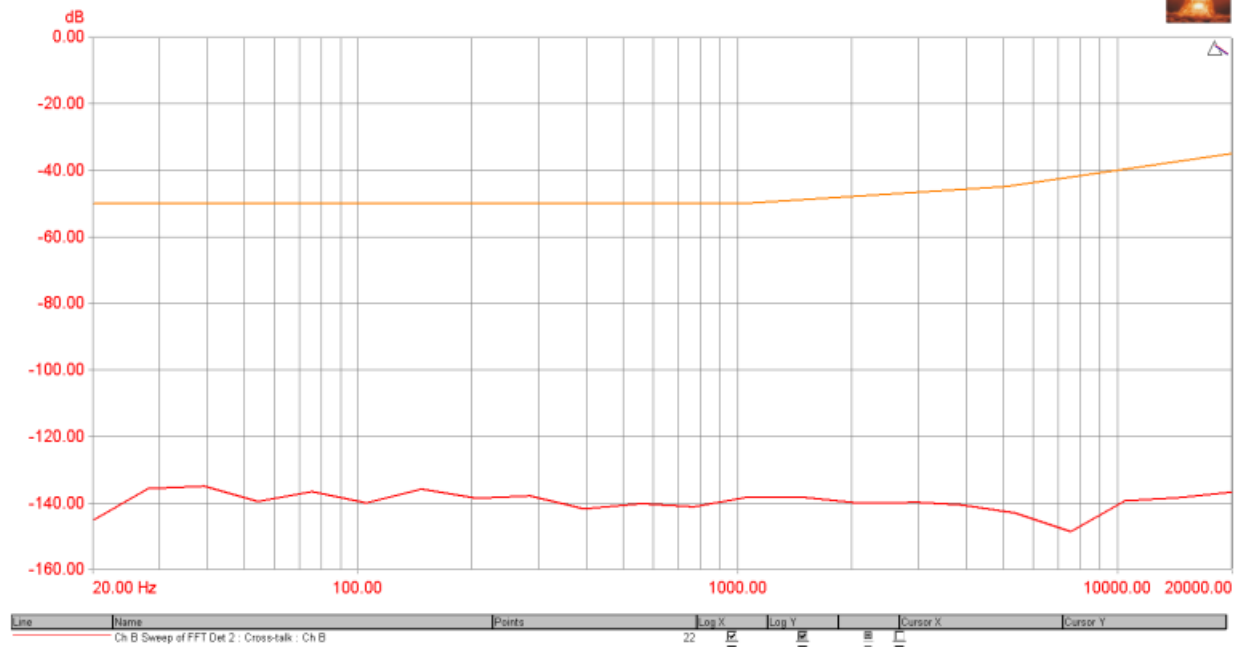| CTA Readings | | |
|---|---|---|
| Cross-talk (Channel B RMS) | -145.882 dB | < -45 dB |
| **Settings:** Channel relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the opposite channel generator frequency | | |

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## A09 Crosstalk B to A: PASSED

Measured at 3/17/2021 12:26:15 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) | -139.263 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 3/17/2021 12:26:20 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



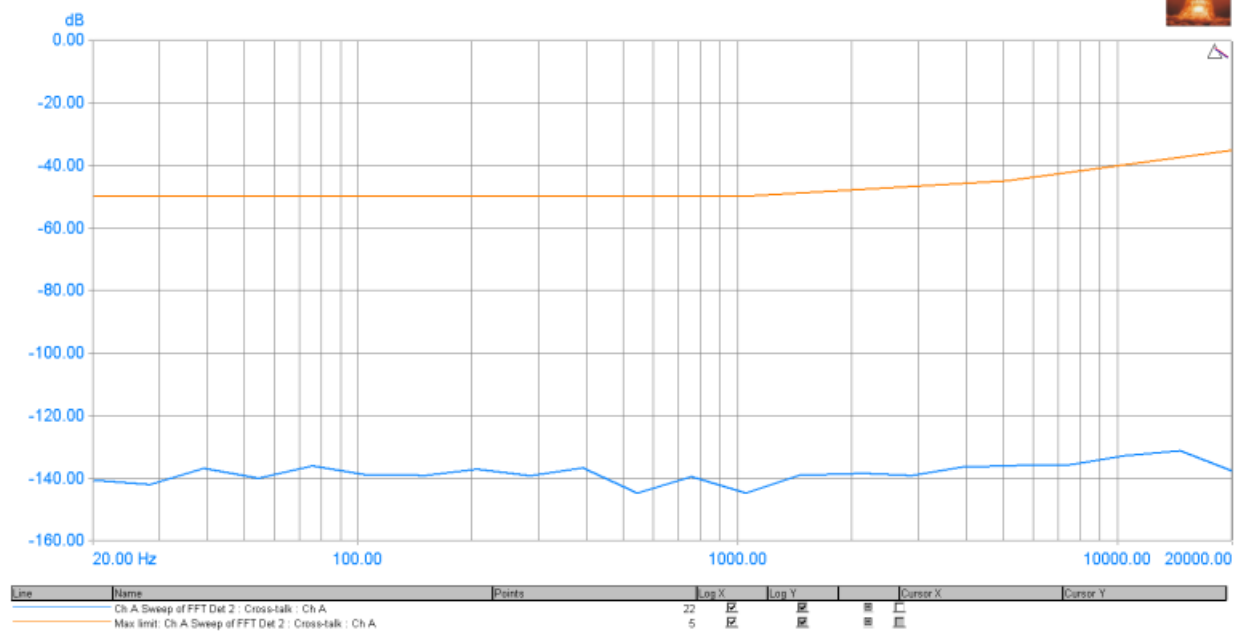| Line | Name | Points | Log X | Log Y | | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|---|
| | Ch B Sweep of FFT Det 2 : Cross-talk : Ch B | 22 | ☑ | ☑ | ▤ ▢ | | |

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### A11 Crosstalk B to A vs Freq: PASSED

Measured at 3/17/2021 12:27:14 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



| Line | Name | Points | Log X | Log Y | | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|---|
| | Ch A Sweep of FFT Det 2 : Cross-talk : Ch A | 22 | ☑ | ☑ | ▤ ▢ | | |
| | Max limit: Ch A Sweep of FFT Det 2 : Cross-talk : Ch A | 5 | ☑ | ☑ | ▤ ▣ | | |

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### A12 FFT 1000 Hz THD+N: PASSED

Measured at 3/17/2021 12:28:06 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) | 10.502 dBu | Not limit checked. |
| RMS amplitude (Non-selected : Ch A) | 10.504 dBu | Not limit checked. |

## CTA Readings

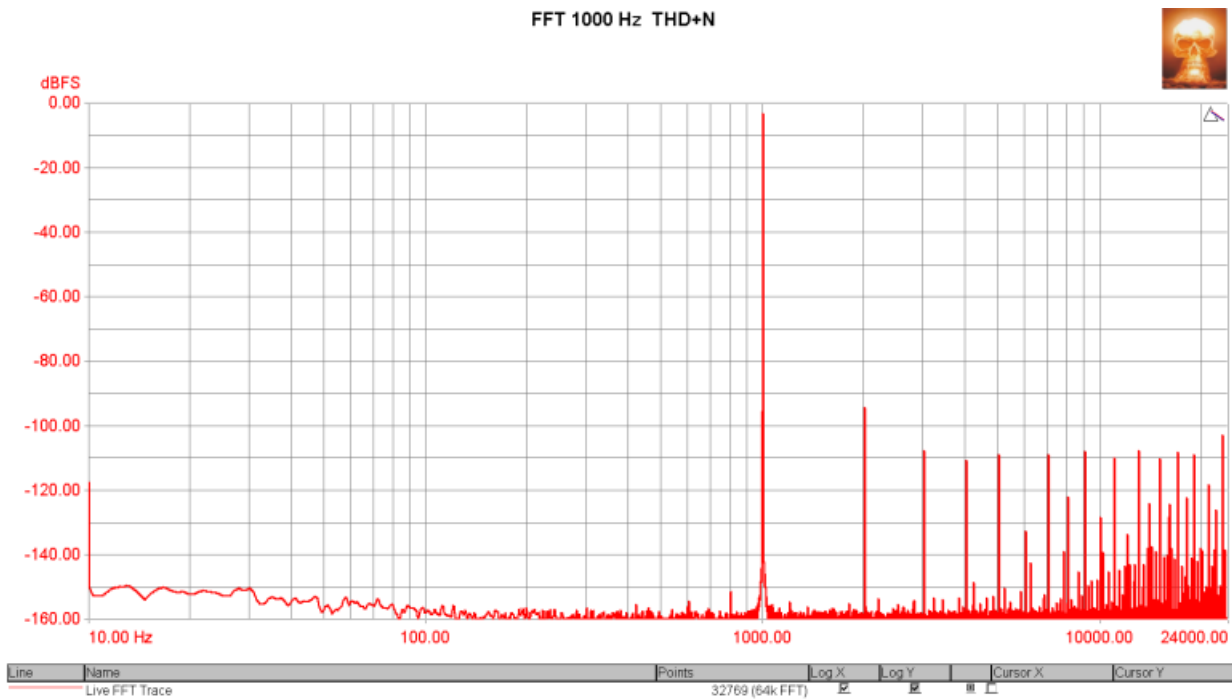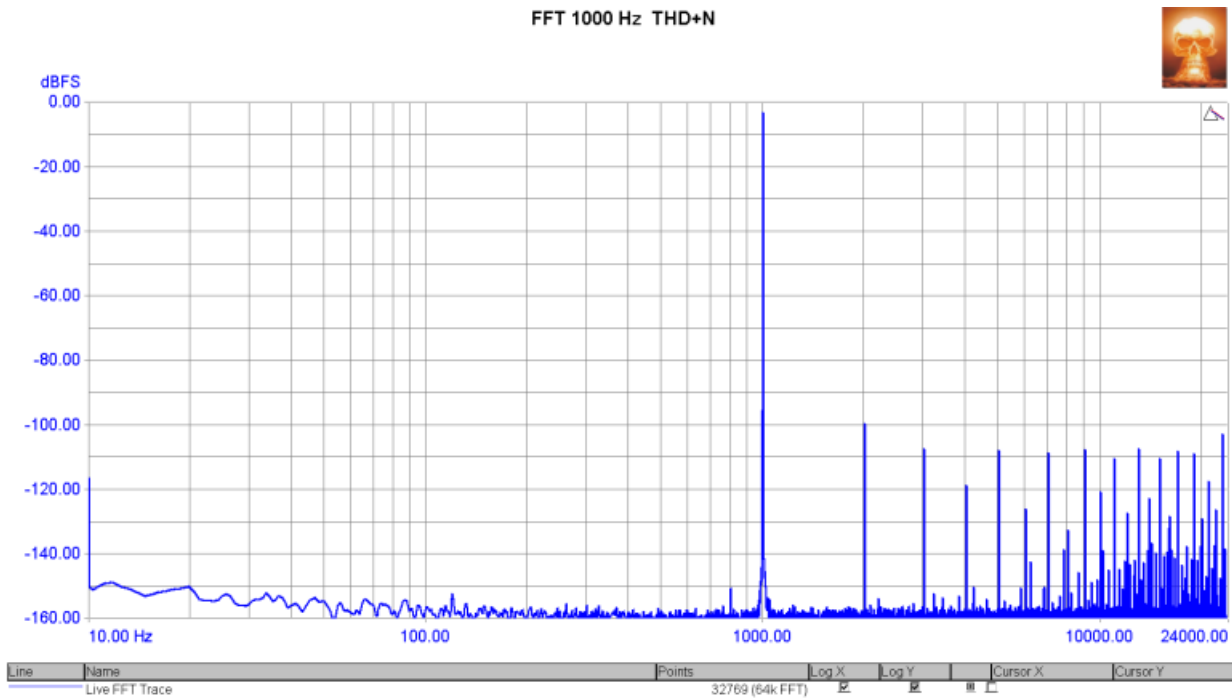| | | |
|---|---|---|
| THD+N - relative (Selected : Ch A RMS) | 0.00218 % | < 0.075 % |
| | | > 0.00000001 % |
| THD+N - relative (Non-selected : Ch A RMS) | 0.00300 % | < 0.075 % |
| | | > 0.00000001 % |

**Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted RMS with 1/3rd octave band-reject filter at the input frequency

### FFT 1000 Hz THD+N

| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | | | | |

### FFT 1000 Hz THD+N

| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | | | | |

## FFT Detector Readings

| | | |
|---|---|---|
| THD+N - relative (Channel A) | 0.00221 % | Not limit checked. |
| THD+N - relative (Channel B) | 0.00314 % | Not limit checked. |

**FFTD 1 Settings:** Self relative, 22 Hz - 20kHz AES17, unweighted with window notch (14 bins) band-reject filter at the input frequency
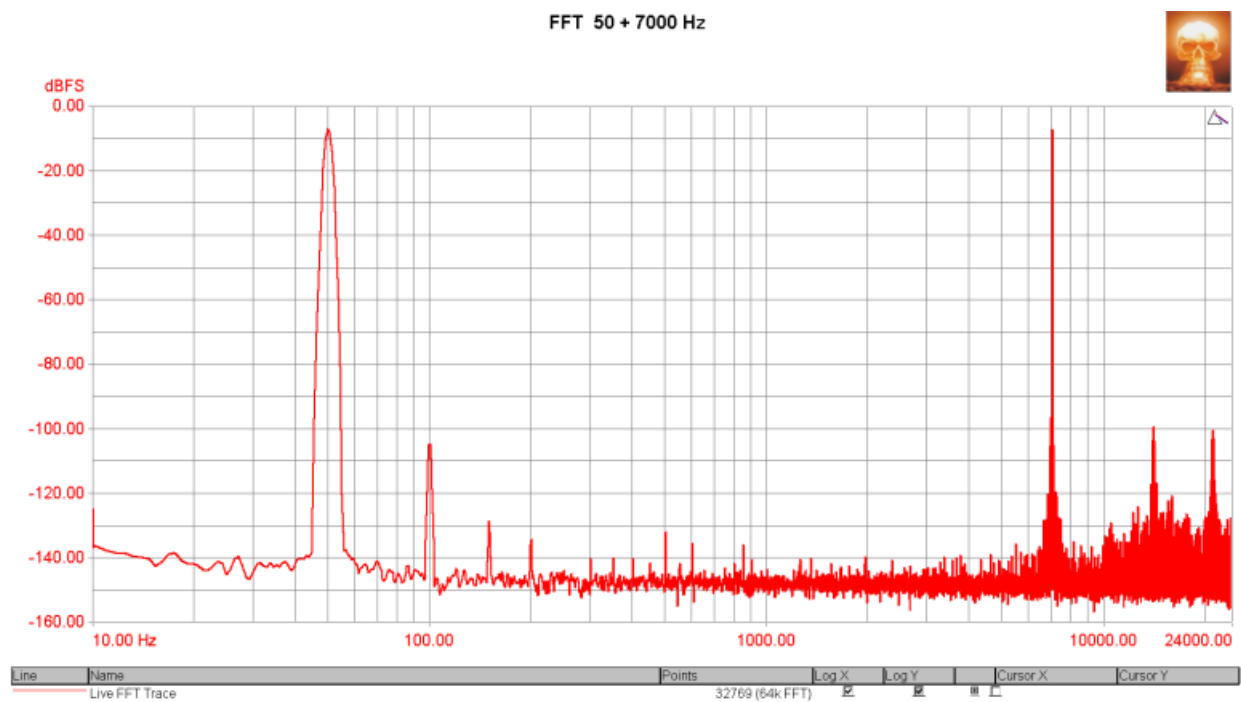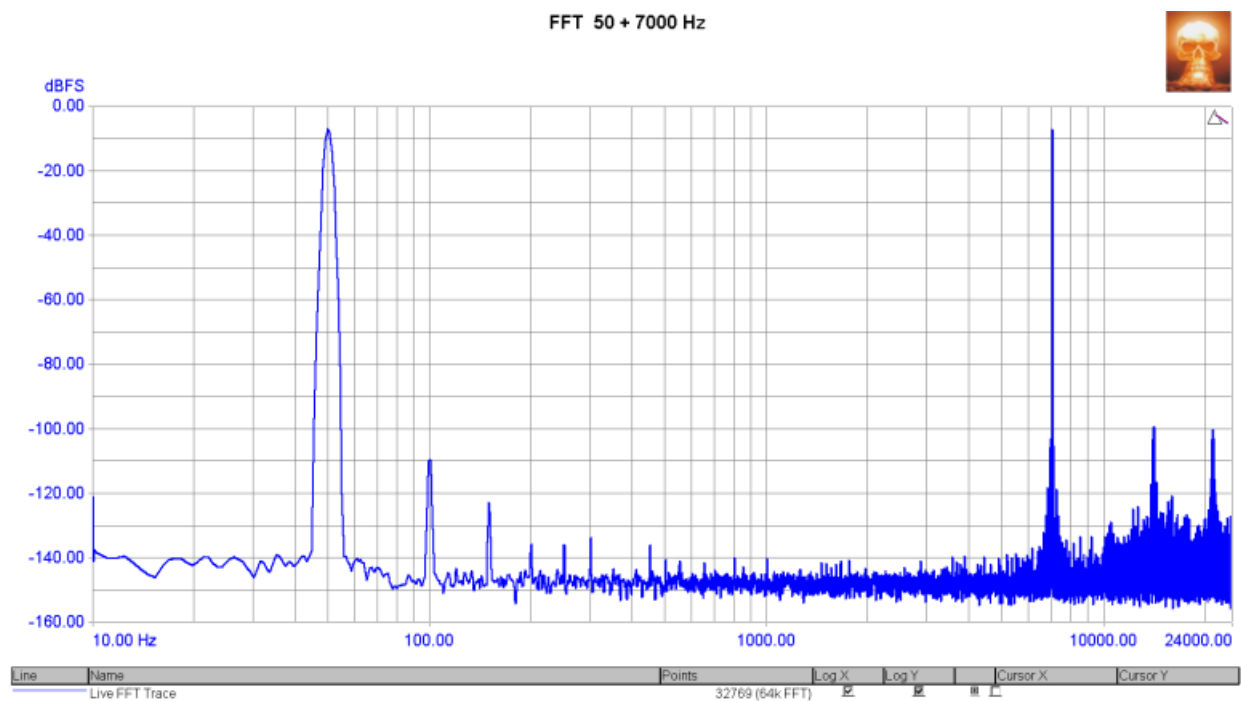
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## A13 FFT 50+7000Hz: PASSED

Measured at 3/17/2021 12:29:28 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) | 9.502 dBu | Not limit checked. |
| RMS amplitude (Channel B) | 9.504 dBu | Not limit checked. |

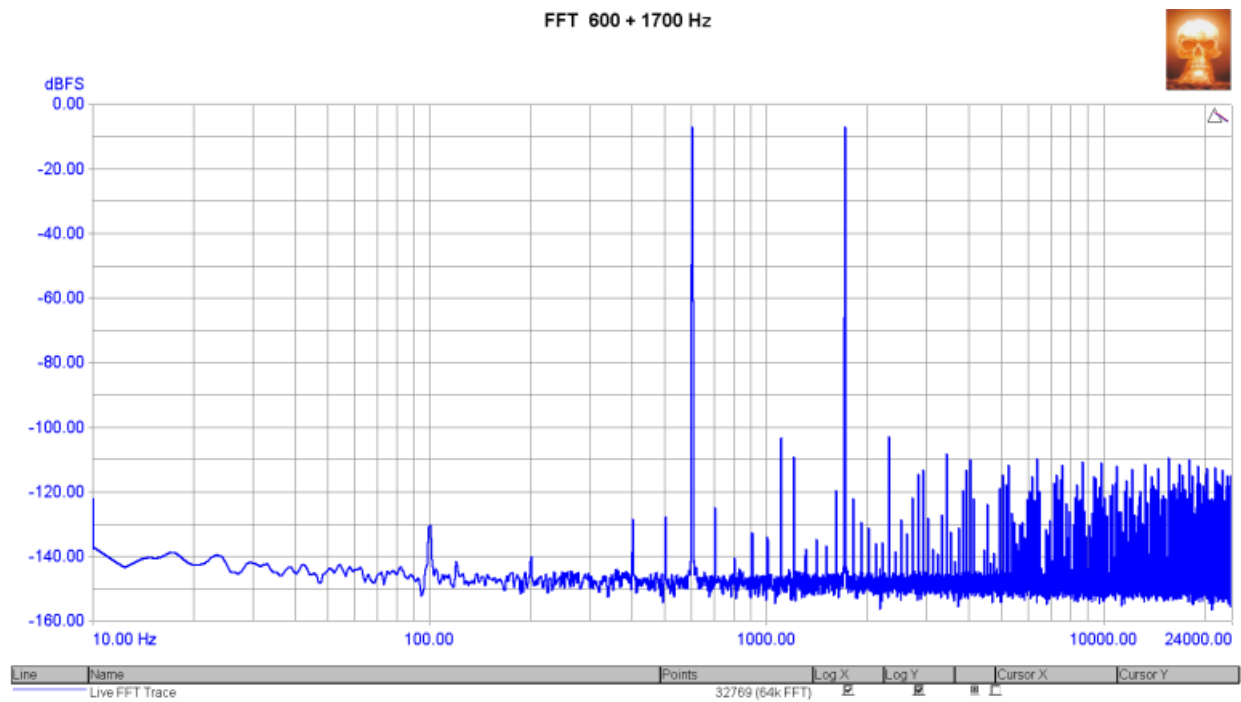| CTA Readings | | |
|---|---|---|
| IMD SMPTE-DIN (Channel A RMS) | 0.00154 % | < 0.05 %<br>> 0 % |
| IMD SMPTE-DIN (Channel B RMS) | 0.00329 % | < 0.05 %<br>> 0 % |
| **Settings:** Self relative, 22 Hz - 22 kHz, unweighted RMS using SMPTE-DIN IMD demodulation. | | |

FFT 50 + 7000 Hz

| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | | |

FFT 50 + 7000 Hz

| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | | |

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## A14 FFT 600+1700 Hz: PASSED

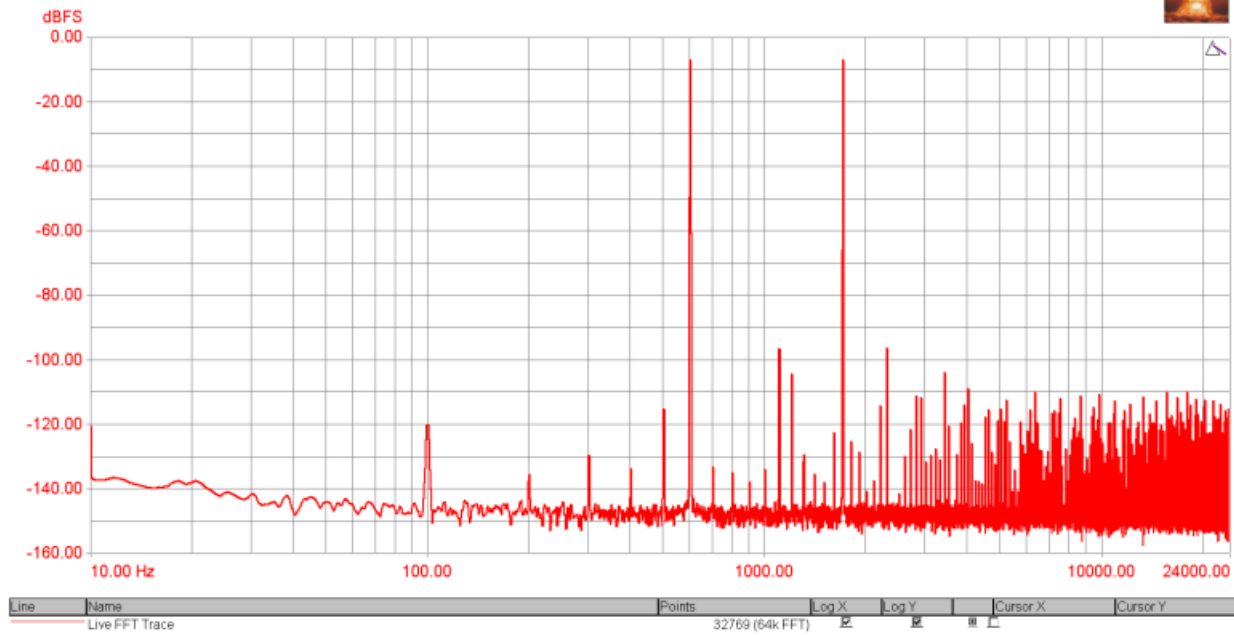Measured at 3/17/2021 12:29:51 PM

| 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) | 9.502 dBu | Not limit checked. |
| RMS amplitude (Channel B) | 9.522 dBu | Not limit checked. |

| CTA Readings | | |
|---|---|---|
| IMD SMPTE-DIN (Channel A RMS) | 0.01272 % | < 0.02 %<br>> 0 % |
| IMD SMPTE-DIN (Channel B RMS) | 0.01270 % | < 0.02 %<br>> 0 % |
| **Settings:** Self relative, 22 Hz - 22 kHz, unweighted RMS using SMPTE-DIN IMD demodulation. | | |



FFT 600 + 1700 Hz

| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | ▣ ⌐ | |

FFT 600 + 1700 Hz

## A15 FFT 19+20 KHz: PASSED

Measured at 3/17/2021 12:30:13 PM

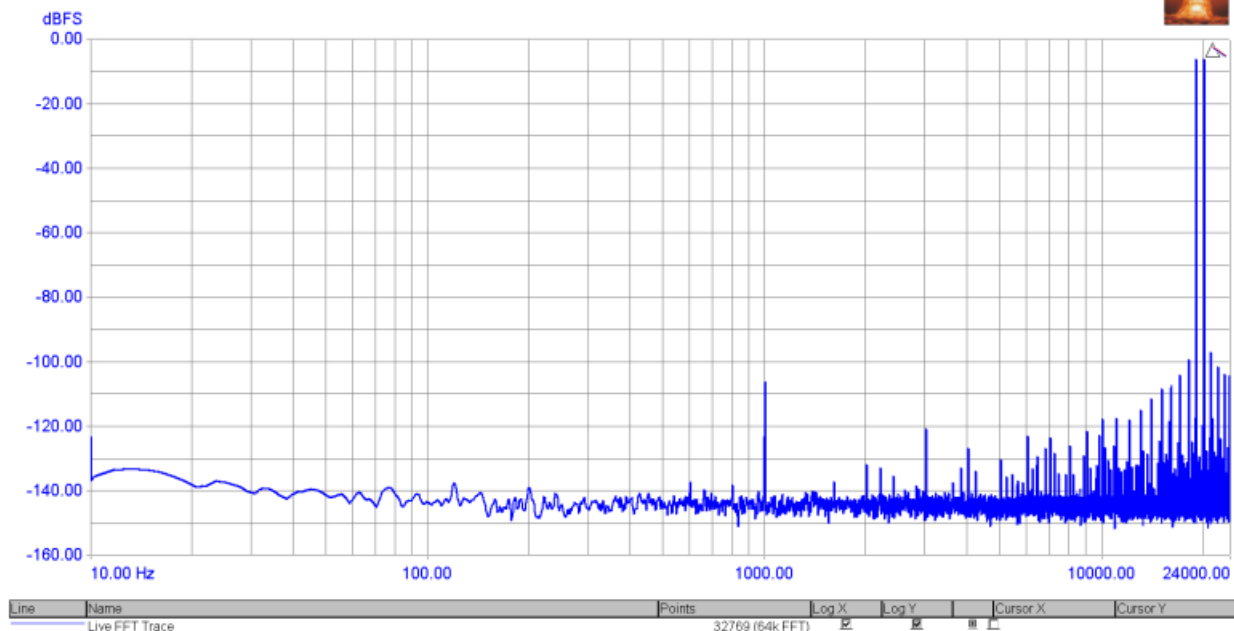| Generator Settings | |
|---|---|
| Channel A: | Twin-tone, -6.03 dBFS at 19000 Hz and 0 dB offset at 1000 Hz offset |
| Channel B: | Twin-tone, -6.03 dBFS at 19000 Hz and 0 dB offset at 1000 Hz offset |

| Signal Analyzer Readings | | |
|---|---|---|
| RMS amplitude (Channel A) | 10.436 dBu | Not limit checked. |
| RMS amplitude (Channel B) | 10.397 dBu | Not limit checked. |

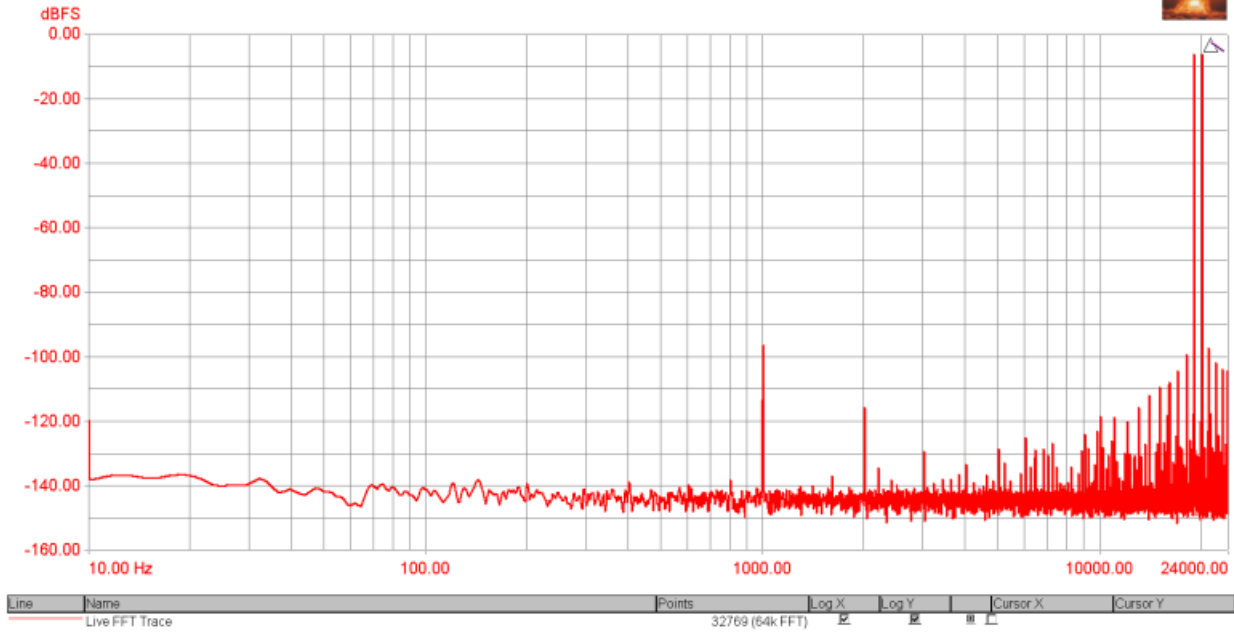| CTA Readings | | |
|---|---|---|
| IMD CCIF (Channel A RMS) | 0.00076 % | < 0.1 % |
| IMD CCIF (Channel B RMS) | 0.00214 % | < 0.1 % |
| Settings: Self relative, 22 Hz - 22 kHz, unweighted RMS with 1/24th octave band-pass filter at the intermodulation difference frequency | | |



FFT 19 + 20 KHz

## FFT 19 + 20 KHz



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | ▥ | ⌐ |

| FFT Detector Readings | | |
|---|---|---|
| IMD CCIF (Channel A) | 0.00068 % | < 0.1 % |
| IMD CCIF (Channel B) | 0.00214 % | < 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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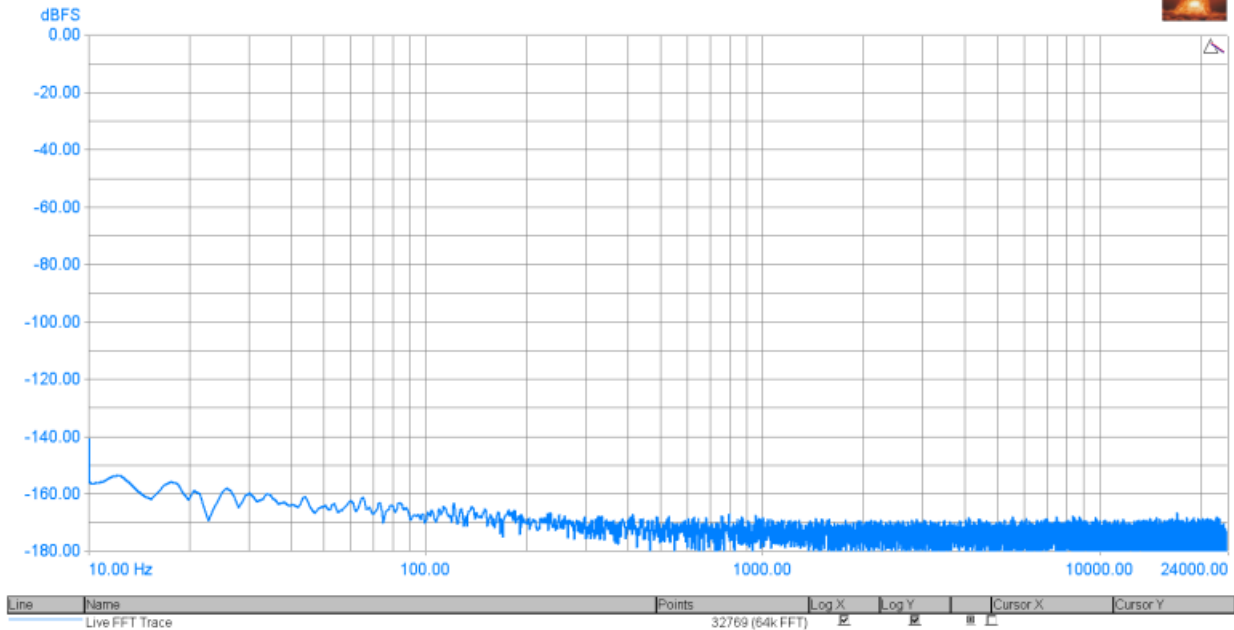## A16 FFT residual noise: PASSED

Measured at 3/17/2021 12:30:35 PM

| Generator Settings | |
|---|---|
| Channel A: | Off |
| Channel B: | Off |

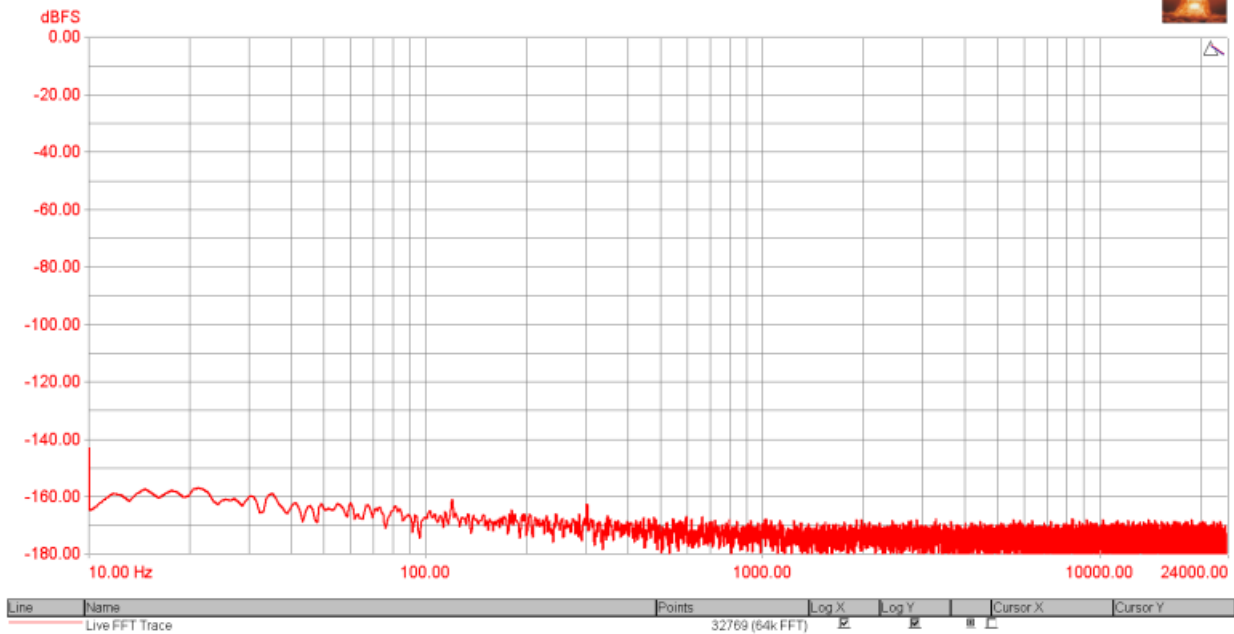| Signal Analyzer Readings | | |
|---|---|---|
| RMS amplitude (Channel A) | -108.265 dBu | Not limit checked. |
| RMS amplitude (Channel B) | -108.553 dBu | Not limit checked. |

## FFT residual noise



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|------|------|--------|-------|-------|----------|----------|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | | |

## FFT residual noise



| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|------|------|--------|-------|-------|----------|----------|
| | Live FFT Trace | 32769 (64k FFT) | ☑ | ☑ | | |

| FFT Detector Readings | | |
|---|---|---|
| Noise (residual) (Channel A) | -132.986 dBFS | < -60 dBFS<br>> -150 dBFS |
| Noise (residual) (Channel B) | -132.982 dBFS | < -60 dBFS<br>> -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.
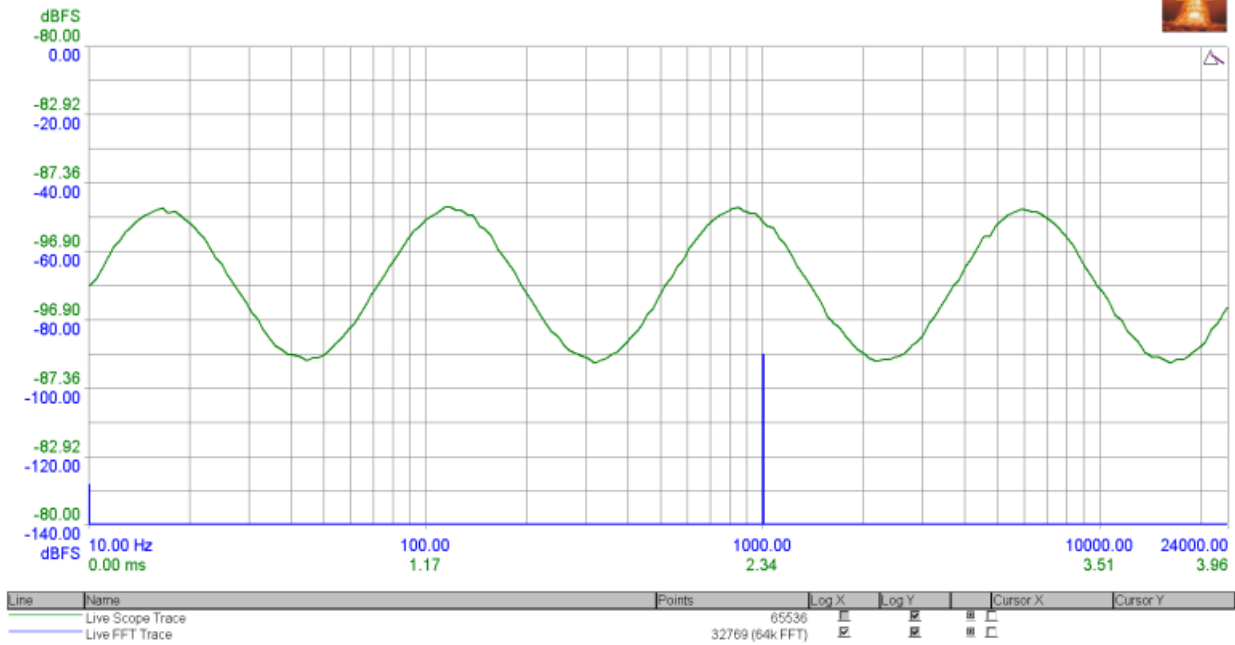
Measured at 3/17/2021 12:32:36 PM

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

| Signal Analyzer Readings | | |
|---|---|---|
| RMS amplitude (Selected : Ch A) | -76.437 dBu | Not limit checked. |

FFT  -90 dBFS

## A17a FFT -120 dBFS: Not limit checked.

Measured at 3/17/2021 12:32:50 PM

| Generator Settings | |
|---|---|
| Channel A: | sine, -120 dBFS at 1000 Hz |
| Channel B: | sine, -120 dBFS at 1000 Hz |

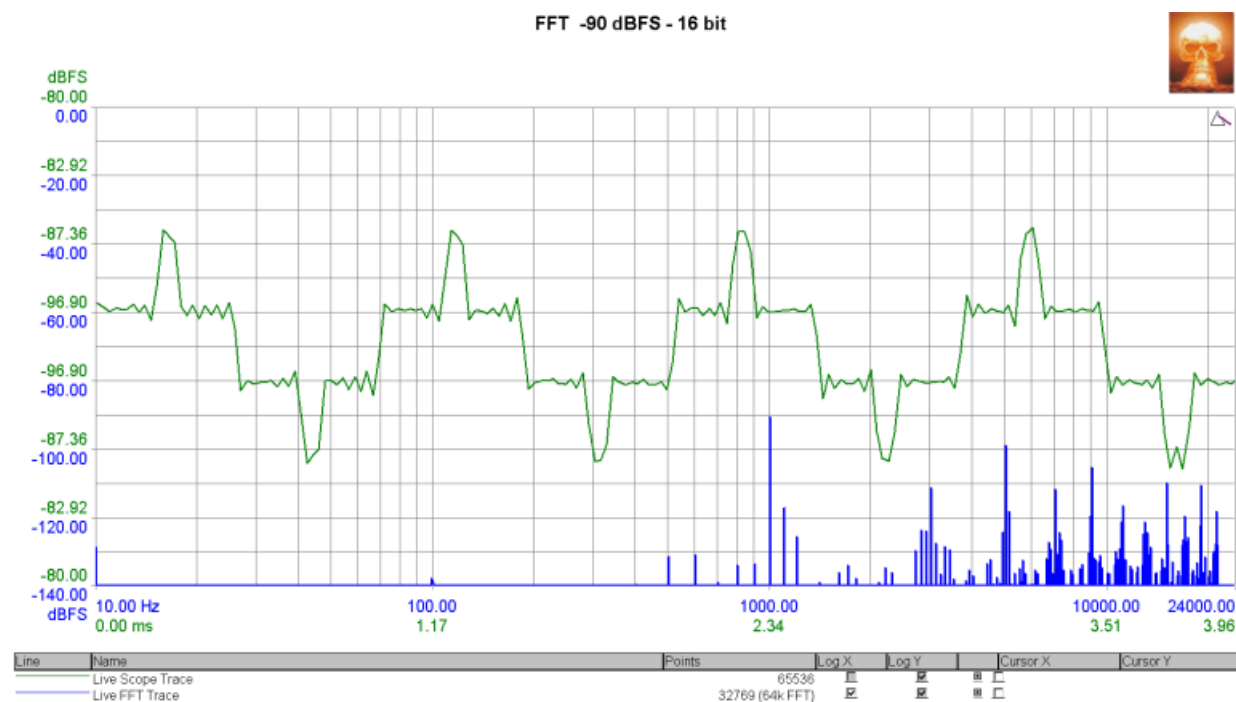| Signal Analyzer Readings | | |
|---|---|---|
| RMS amplitude (Selected : Ch A) | -104.748 dBu | Not limit checked. |



FFT  -120 dBFS
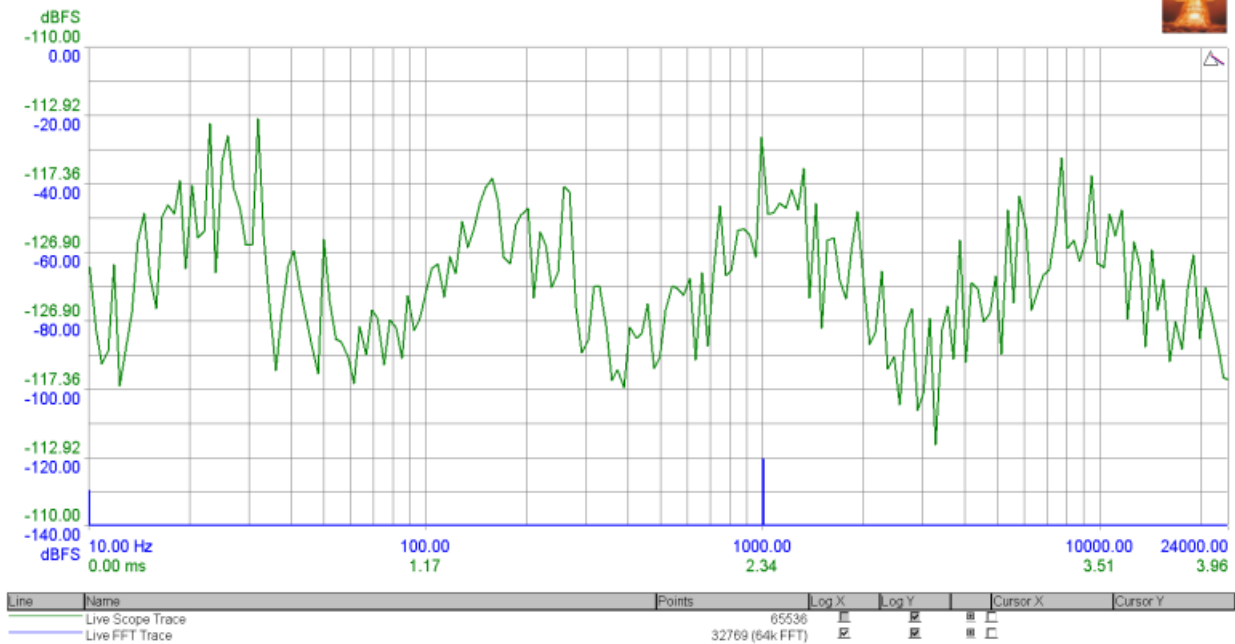
## A18 FFT -90 dBFS 16 bit: Not limit checked.

Measured at 3/17/2021 12:33:03 PM

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

| Signal Analyzer Readings | | |
|---|---|---|
| RMS amplitude (Selected : Ch A) | -76.092 dBu | Not limit checked. |



FFT -90 dBFS - 16 bit

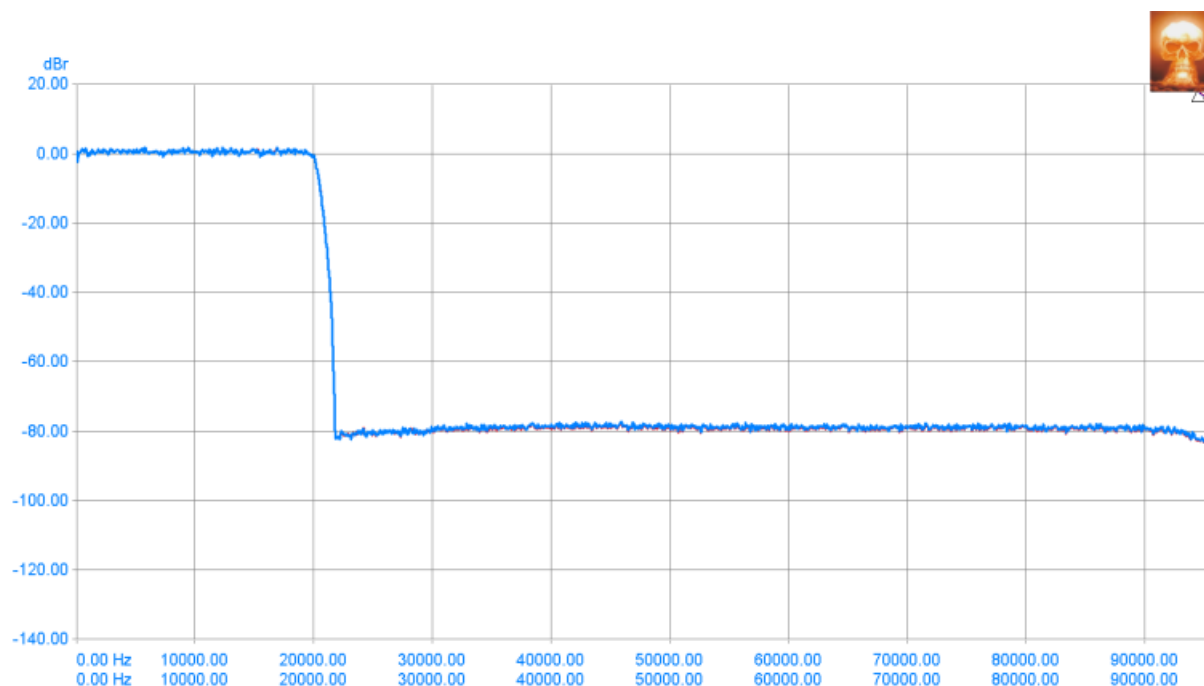| Line | Name | Points | Log X | Log Y | Cursor X | Cursor Y |
|---|---|---|---|---|---|---|
| | Live Scope Trace | 65536 | | | | |
| | Live FFT Trace | 32769 (64k FFT) | | | | |

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**A19 FFT imaging:** Not limit checked.

Measured at 3/17/2021 12:33:17 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.

Measured at 3/17/2021 12:33:40 PM

| Generator Settings | |
| --- | --- |
| Channel A: | sine, -6 dBFS at 11025 Hz |
| Channel B: | sine, -6 dBFS at 11025 Hz (inverted) |