

| Audio amplifier test report | | |
|-----------------------------------|------------------------------------|---|
| Brand | Luxman | Freeword notes: By FfCossag - https://youtube.com/user/FfCossag Input level varied at signal generator for many tests, as 0,775 V is not enough to push the amplifier into clipping. Device under test is fully restored, fitted with upgraded power and driver transistors, new capacitors (2010) and completely adjusted to spec prior to testing. |
| Model | M-120A | |
| Topology | Class AB linear amplifier | |
| Rated power 8Ω | 120 W/ch | |
| Rated power 6Ω | W/ch | |
| Rated power 4Ω | 150 W/ch | |
| Rated power 2Ω | W/ch | |
| Rated THD @ Power / Ω | 0,015 % / 8 Ω | |
| | % / 6 Ω | |
| | 0,015 % / 4 Ω | |
| | % / 2 Ω | |
| Rated frequency range (tolerance) | 10 Hz - 100 kHz (+0/-1 dB) | |
| Rated damping factor | 50 | |
| Rated output impedance | | |
| Rated noise floor | | |
| Rated SNR | 110 dB | |
| Rated power consumption | | |
| Test conditions | | |
| Distortion meter | HP 339A | |
| Voltmeter | Brymen BM869 | |
| Load | 8 Ohms/4 Ohms switchable resistive | |
| Input level | 775 mV | |
| Weighting | Flat | |
| Optional info | Testing performed at 2017-01-09 | |

| Executive summary | | | |
|---|---------------------------|--------------------------------|---|
| Values averaged across channels where applicable. | | | |
| Spec | Value | Comment | |
| Noise floor | 80,5µV (-81,9 dBV) | Good | |
| Out-of-band noise | #DIV/0! | | |
| SNR | 112,8 dB | Above spec. | |
| Gain | 30,9 dB | As expected. | |
| Damping factor @ 8Ω (output impedance) | 177 (45 mΩ) | Excellent | |
| Frequency response | #DIV/0! | <10 Hz - >110 kHz | |
| Worst-case channel mismatch | 0,05 dB | Excellent | |
| Efficiency | | | |
| | @ ½ power | 39,65 % | |
| | @ rated power | 58,36 % | |
| Power output 8 Ω, both channels driven | | | |
| | @ spec. THD+N | 153 W | Excellent |
| | @ 0.3 % THD+N | 157 W | Excellent |
| | @ 1 % THD+N | 166,5 W | Excellent |
| | @ 10 % THD+N | 204 W | Excellent |
| Power output 4 Ω, both channels driven | | | |
| | @ spec. THD+N | #DIV/0! | Overload protection engages prior to clipping. (170 W/ch.) |
| | @ 0.3 % THD+N | #DIV/0! | |
| | @ 1 % THD+N | #DIV/0! | |
| | @ 10 % THD+N | #DIV/0! | |

| THD+N vs. output power | |
|------------------------------|---------------|
| L-CH, 1 kHz, 30 kHz HPF, 8 Ω | |
| Pout | THD+N (%) |
| 50 mW / 633 mV | 0,018 |
| 100 mW / 894 mV | 0,0135 |
| 500 mW / 2 V | 0,0082 |
| 1 W / 2.83 V | 0,0067 |
| 2 W / 4 V | 0,0057 |
| 3 W / 4.9 V | 0,0054 |
| 4 W / 5.66 V | 0,0052 |
| 5 W / 6.32 V | 0,005 |
| 10 W / 8.94 V | 0,0042 |
| 20 W / 12.65 V | 0,0038 |
| 30 W / 15.49 V | 0,0038 |
| 40 W / 17.89 V | 0,0039 |
| 50 W / 20 V | 0,004 |
| 80 W / 25.30 V | 0,0034 |
| 100 W / 28.28 V | 0,0038 |
| 110 W / 29.66 V | 0,0038 |
| 120 W / 30.98 V | 0,0037 |
| 140 W / 33.47 V | 0,0038 |
| 160 W / 35.78 V | 0.5 |

Percentage of the signal that is distorted by imperfections in the amplifier; lower is better.

High distortion at low power indicates a "hissy" amplifier.

High distortion at high power levels indicates that an amplifier is approaching its maximum power.

| THD+N vs. output power | |
|------------------------------|---------------|
| R-CH, 1 kHz, 30 kHz HPF, 8 Ω | |
| Pout | THD+N (%) |
| 50 mW / 633 mV | 0,014 |
| 100 mW / 894 mV | 0,0105 |
| 500 mW / 2 V | 0,0059 |
| 1 W / 2.83 V | 0,0049 |
| 2 W / 4 V | 0,0043 |
| 3 W / 4.9 V | 0,004 |
| 4 W / 5.66 V | 0,0038 |
| 5 W / 6.32 V | 0,0037 |
| 10 W / 8.94 V | 0,0034 |
| 20 W / 12.65 V | 0,0033 |
| 30 W / 15.49 V | 0,0031 |
| 40 W / 17.89 V | 0,003 |
| 50 W / 20 V | 0,0029 |
| 80 W / 25.30 V | 0,0026 |
| 100 W / 28.28 V | 0,0027 |
| 110 W / 29.66 V | 0,0027 |
| 120 W / 30.98 V | 0,0027 |
| 140 W / 33.47 V | 0,0029 |
| 160 W / 35.78 V | 0.5 |

*Notes about testing go here

| Distortion at rated power | |
|---------------------------|--|
| Left channel | |
| 8 Ω, 1 kHz, 120 W | |
| 0,0038 % THD+N | |

| Distortion at rated power | |
|---------------------------|--|
| Right channel | |
| 8 Ω, 1 kHz, 120 W | |
| 0,0027 % THD+N | |

| Distortion at rated power | |
|---------------------------|--|
| Left channel | |
| 4 Ω, 1 kHz, 150 W | |
| 0,0064 % THD+N | |

| Distortion at rated power | |
|---------------------------|--|
| Right channel | |
| 4 Ω, 1 kHz, 150 W | |
| 0,0052 % THD+N | |

| Power at rated distortion | |
|---------------------------|--|
| Left channel | |
| 8 Ω, 1 kHz, 0,015 % THD+N | |
| 153,0 W | |

| Power at rated distortion | |
|---------------------------|--|
| Right channel | |
| 8 Ω, 1 kHz, 0,015 % THD+N | |
| 153,0 W | |

| Power at rated distortion | |
|---------------------------|----------|
| Left channel | |
| 4 Ω, 1 kHz, 0,015 % THD+N | |
| OVERLOAD | W |

| Power at rated distortion | |
|---------------------------|----------|
| Right channel | |
| 4 Ω, 1 kHz, 0,015 % THD+N | |
| OVERLOAD | W |

| Clipping power, both channels driven | |
|--------------------------------------|--|
| Left channel | |
| 8 Ω, 0,3 % THD+N | |
| 157,0 W | |
| 8 Ω, 1 % THD+N | |
| 166,5 W | |
| 8 Ω, 10 % THD+N | |
| 204,0 W | |

Grid voltage variations during testing may affect these measurements.

Amplifiers with overheating issues may produce inconsistent numbers in these tests.

| Clipping power, both channels driven | |
|--------------------------------------|--|
| Right channel | |
| 8 Ω, 0,3 % THD+N | |
| 157,0 W | |
| 8 Ω, 1 % THD+N | |
| 166,5 W | |
| 8 Ω, 10 % THD+N | |
| 204,0 W | |

| Clipping power, both channels driven | |
|--------------------------------------|----------|
| Left channel | |
| 4 Ω, 0,3 % THD+N | |
| OVERLOAD | W |
| 4 Ω, 1 % THD+N | |
| OVERLOAD | W |
| 4 Ω, 10 % THD+N | |
| OVERLOAD | W |

| Clipping power, both channels driven | |
|--------------------------------------|----------|
| Right channel | |
| 4 Ω, 0,3 % THD+N | |
| OVERLOAD | W |
| 4 Ω, 1 % THD+N | |
| OVERLOAD | W |
| 4 Ω, 10 % THD+N | |
| OVERLOAD | W |

| Output impedance | |
|------------------------------|----------------------|
| Left channel, ½ power, 8 Ohm | |
| Loaded voltage | Voltage differential |
| 21,84 | 0,117 |
| Output impedance | |
| 0,043 Ω | |
| Damping factor | |
| 186 | |

| Output impedance | |
|-------------------------------|----------------------|
| Right channel, ½ power, 8 Ohm | |
| Loaded voltage | Voltage differential |
| 22,06 | 0,13 |
| Output impedance | |
| 0,05 Ω | |
| Damping factor | |
| 167 | |

The amplifier is set to put out half power into a dummy load, and the voltage differential when the load is switched off is noted. The damping factor and output impedance can be calculated from this value.

| Output impedance | |
|----------------------------|----------------------|
| Left channel, ½ power, 4 Ω | |
| Loaded voltage | Voltage differential |
| 15,33 | 0,16 |
| Output impedance | |
| 0,042 Ω | |
| Damping factor | |
| 95 | |

| Output impedance | |
|-----------------------------|----------------------|
| Right channel, ½ power, 4 Ω | |
| Loaded voltage | Voltage differential |
| 15,48 | 0,18 |
| Output impedance | |
| 0,048 Ω | |
| Damping factor | |
| 84 | |

| Unweighted noise floor, Left channel | |
|--|--|
| 30 kHz HPF, input shorted, vol = -inf. | |
| 91,00 μV (-80,82 dBV) | |
| 30 kHz HPF, input shorted, vol = FS | |
| 91,00 μV (-80,82 dBV) | |

In the second test, the volume is set to the level required for full output power at the input level used at the rated power test.

| Unweighted noise floor, Right channel | |
|--|--|
| 30 kHz HPF, input shorted, vol = -inf. | |
| 70,00 μV (-83,1 dBV) | |
| 30 kHz HPF, input shorted, vol = FS | |
| 70 μV (-83,1 dBV) | |

| Unweighted SNR, 8 Ω, Left channel | |
|---------------------------------------|--|
| 30 kHz HPF, input shorted, vol = -inf | |
| 111,70 dB | |
| 30 kHz HPF, input shorted, vol = FS | |
| 111,70 dB | |

SNR as it is usually rated: The ratio of the shorted input noise to the full-scale power.

| Unweighted SNR, 8 Ω, Right channel | |
|--|--|
| 30 kHz HPF, input shorted, vol = -inf. | |
| 113,98 dB | |
| 30 kHz HPF, input shorted, vol = FS | |
| 113,98 dB | |

| Out-of-band noise, Left channel | |
|---------------------------------|-------------|
| Amplitude, input shorted | |
| N/A | mVpp |
| Frequency | |
| N/A | kHz |

Inaudible high-frequency switching noise indicates a poor output filter in class D amplifiers.

| Out-of-band noise, Right channel | |
|----------------------------------|-------------|
| Amplitude, input shorted | |
| N/A | mVpp |
| Frequency | |
| N/A | kHz |

| Gain, Left channel | |
|--------------------|--|
|--------------------|--|

| Gain, Right channel | |
|---------------------|--|
|---------------------|--|

| |
|-------------------------------|
| Volume set to 0 dB or maximum |
| 30,90 dB |
| Fixed attenuator attenuation |
| N/A dB |

| |
|-------------------------------|
| Volume set to 0 dB or maximum |
| 30,90 dB |
| Fixed attenuator attenuation |
| N/A dB |

| -3 dB point | |
|----------------------------|--------------------|
| Left channel, ½ power (Hz) | |
| Low, 8 Ω | High, 8 Ω |
| <10 Hz | >110 kHz |
| Low, 4 Ω | High, 4 Ω |
| <10 Hz | >110 kHz |

The -3 dB point specifies where the amplifier starts to roll off in the extremes of its frequency range.

| -3 dB point | |
|-----------------------------|--------------------|
| Right channel, ½ power (Hz) | |
| Low, 8 Ω | High, 8 Ω |
| <10 Hz | >110 kHz |
| Low, 4 Ω | High, 4 Ω |
| <10 Hz | >110 kHz |

| Frequency response | | | | |
|---|----------|----------|-----------|-------------|
| Left channel, ½ power, 8 Ω, THD+N in parentheses, 80 kHz HPF | | | | |
| 20 Hz | 100 Hz | 1000 Hz | 10 000 Hz | 20 000 Hz |
| 0 | 0 | 0 | 0 | -0,2 |
| Right channel, ½ power, 8 Ω, THD+N in parentheses, 80 kHz HPF | | | | |
| 20 Hz | 100 Hz | 1000 Hz | 10 000 Hz | 20 000 Hz |
| 0 | 0 | 0 | 0 | -0,2 |

| Channel gain mismatch | | | | |
|--|----------------------|--|------------|----------------------|
| 8 Ω, 1 kHz, variable input level, non-clipping | | | | |
| Worst case | | | Best case | |
| 0,05 | dB | | N/A | dB |
| MAX | Knob position | | N/A | Knob position |

| Efficiency | | | | |
|---|-----------------------|---------------------|--|-----------------------|
| 8 Ω, 1 kHz, variable input level, power according to 0.3 % THD+N result | | | | |
| Efficiency at ½ power (78,5 W/ch.) | | | Efficiency at maximum non-clipping power (157 W/ch.) | |
| | V input | | | V input |
| | A input | | | A input |
| | 396,00 W input | | | 538,00 W input |
| | 39,65 % | % efficiency | | 58,36 % |
| | | | | % efficiency |