LMH6518 output offset issue

1. Phenomenon

The output offset drifts if it has a large continuous input within the spec of absolute maximum(±1V).

1. Setup and test method



D1 and D2 protect LMH6518, so it can receive a large input from CH1 ATT SIG.

The waveform at +IN pin this time is shown below.

* The input is clamped within ±0.84V centered at +2.5V which meets the absolute maximum voltage of ±1V.
* The input signal before clamp is around 6Vpp/50Hz sinewave centered at +2.5V.
* It stays at that condition for 15 hours.

The conditions for LMH6518 are as follows.

PreAMP =10dB、Ladder ATT=0dB、Output AMP=8.86dB

Total Gain = 18.86dB



1. Results

The voltages at LMH6518 were compared by before/after the tests.

It has a small offset at the input pins, but it does a large one at the output pins.

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| --- | --- | --- | --- |
| Terminals | Before test（V） | After test（V） | Difference(mV) |
| ＋IN | +2.5016 | +2.5019 | +0.3mV |
| ―IN | +2.5001 | +2.5002 | +0.1mV |
| ＋OUT | +1.2211 | +1.2518 | +30.7mV |
| ―OUT | +1.2184 | +1.1923 | -26.1mV |

1. Question

Would you please tell me the potential root causes why LMH6518 output offset drifts even though the input is within the spec?

Note that there is no offset change if there is no input.