# Tape reference level

# Old German 320 nWb/m level

Reference fluxivity of G320 nWb/m is consistent with the German flux measurements made in the 1950’s that are used in the UK and Europe to this day.

The actual fluxivity of these recordings as measured by DIN 45520 or AES7/ANSI S4.6 is **290nWb/m**.

The original tape flux measurements were made in Germany in the late 1950’s, using a transfer-to-dc method standardized in German Standard DIN 45520.

These measurements are the basis for the reference fluxivity of 320 nWb/m used on German calibration tapes made by BASF and Agfa (now a part of BASF).

In the late 1960’s Ampex used the ANSI method to measure the German tapes, and found that the German reference fluxivity was not 320 nWb/m, but only 290 nWb/m, which is about 1 dB low.

Recent new measurements at MRL have confirmed that flux measurement by the transfer-to-dc method used in Germany gives exactly the same results as the ANSI method. So MRL have concluded that the original (1950’s) German measurement was in error by 10%.

The MRL Calibration Tapes made to conform to the old German measurements were previously identified by MRL as “320” nWb/m; this has now been changed to G320 nWb/m, indicating 320 nWb/m according to the original German measurement.

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Operating Level Flux@1000Hz Flux@700Hz
0dB          180 nWb/m   185 nWb/m
+1dB             200 nWb/m
+2dB             224 nWb/m
+3dB         250 nWb/m   260 nWb/m
+4dB         280 nWb/m   G320 nWb/m
+5dB         315 nWb/m
+6dB         355 nWb/m   370 nWb/m
+7dB         400 nWb/m
+8dB         450 nWb/m   G510 nWb/m
+9dB         500 nWb/m
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| Magnetic flux Φ | Flux level LΦ |
|---|---|
| 520 nWb/m | +6.36 dB |
| 370 nWb/m | +3.41 dB |
| 320 nWb/m | +2.14 dB |
| 250 nWb/m | 0 dB |
| 220 nWb/m | −1.11 dB |
| 200 nWb/m | −1.94 dB |
| 185 nWb/m | −2.62 dB |
| 150 nWb/m | −4.44 dB |

1/4 track machines will respond different that 1/2 track machines.

The 1/2 track decks can use 370 nWb/M (+6dB) but the A2300 will not work well with that level. It needs to be no higher than 250 but more correct 200 if you want full bandwidth. Like a lot of guys are oing they get blinded except for one spec and that is flux density. This may enhance S/N ratio but also distortion goes up and bandwidth goes down.

So you are better off with a 200nWb/M tape for the A2300 at 7.5 IPS and can also be used on the quad Otari. The 25-2 is not going to like the levels above 250 nWb/M as it is designed and the A7300-2T is better off at 250 as well. If you want to run 370 nWb/M the Tascam 52, 62 and ATR units are more suited and have jumpers for those levels. Higher is not always better!

The track width of machines has a lot to do with how much flux you can throw at it. The 1/4 track decks like to have 200nWb/M and on a rare occasion maybe 250 but nothing higher. the 1/2 track machines is where you have many options and depending on the speed you might be able to throw a lot of signal at it. You know the other thing in upping the flux density- the tape has a fixed saturation point let just say +15. If you go and set up a deck for +6(370) instead or +3 (250) then what you risk is a saturation happening sooner as you then do not have +15 headroom but +9.

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