$X = L$, and $X_r = L_r$ for takeoff
$X = M$, and $X_r = M_r$ for flyover
$X = N$, and $X_r = N_r$ for approach

(ii) The remainder of the procedure is the same for the sideline paths as that prescribed in the paragraph (f)(1)(ii) of this section regarding takeoff flight paths.

(g) *Duration corrections.* (1) If the measured takeoff and approach flight paths do not conform to those prescribed as the corrected and reference flight paths, respectively, under section A36.5(d)(2) it will be necessary to apply duration corrections to the EPNL values calculated from the measured data. Such corrections must be calculated as follows:

(i) *Takeoff flight path.* For the takeoff path shown in Figure H1, the correction term is calculated using the formula—

$$\Delta_2 = -7.5 \log (AL/AL_r) + 10 \log (V/V_r)$$

which represents the correction that must be added algebraically to the EPNL calculated from the measured data. The lengths AL and $AL_r$ are the measured and reference takeoff distances from the noise measuring station A to the measured and the reference takeoff paths, respectively. A negative sign indicates that, for the particular case of a duration correction, the EPNL calculated from the measured data must be reduced if the measured takeoff path is at greater altitude than the reference takeoff path.

(ii) *Level flyover flight paths.* For the level flyover flight path, the correction term is calculated using the formula—

$$\Delta_2 = -7.5 \log (AM/AM_r) + 10 \log (V/V_r)$$

where AM is the measured flyover distance from the noise measuring station A to the measured flyover path, and $AM_r$ is the reference distance from station A to the reference flyover path.

(iii) *Approach flight path.* For the approach path shown in Figure H3, the correction term is calculated using the formula—

$$\Delta_2 = -7.5 \log (AN/AN_r) + 10 \log (V/V_r)$$

where AN is the measured approach distance from the noise measuring station A to the measured approach path, and $AN_r$ is the reference distance from station A to the reference approach path.

(iv) *Sideline microphones.* For the sideline flight path, the correction term is calculated using the formula—

$$\Delta_2 = -7.5 \log (SX/SX_r) + 10 \log (V/V_r)$$

where S is the sideline measuring station and based upon the flight condition, the helicopter positions, X and $X_r$, correspond to:

$X = L$, and $X_r = L_r$ for takeoff
$X = M$, and $X_r = M_r$ for flyover
$X = N$, and $X_r = N_r$ for approach

(2) The adjustment procedure described in this section shall apply to the sideline microphones in the take-off, overflight, and approach cases. Although the noise emission is strongly dependent on the directivity pattern, variable from one helicopter type to another, the propagation angle $\theta$ shall be the same for test and reference flight paths. The elevation angle $\psi$ shall not be constrained but must be determined and reported. The certification authority shall specify the acceptable limitations on $\psi$. Corrections to data obtained when these limits are exceeded shall be applied using FAA approved procedures.

## PART D—NOISE LIMITS UNDER § 36.805

### *Section H36.301 Noise measurement, evaluation, and calculation.*

Compliance with this part of this appendix must be shown with noise levels measured, evaluated, and calculated as prescribed under Parts B and C of this appendix.

### *Section H36.303 [Reserved]*

### *Section H36.305 Noise levels.*

(a) *Limits.* For compliance with this appendix, the applicant must show by flight test that the calculated noise levels of the helicopter, at the measuring points described in section H36.305(a) of this appendix, do not exceed the following, (with appropriate interpolation between weights):

(1) *Stage 1* noise limits for acoustical changes for helicopters are as follows:

(i) For takeoff, flyover, and approach calculated noise levels, the noise levels of each Stage 1 helicopter that exceed the Stage 2 noise limits plus 2 EPNdB may not, after a change in type design, exceed the noise levels created prior to the change in type design.

(ii) For takeoff, flyover, and approach calculated noise levels, the noise levels of each Stage 1 helicopter that do not exceed the Stage 2 noise limits plus 2 EPNdB may not, after the change in type design, exceed the Stage 2 noise limits plus 2 EPNdB.

(2) *Stage 2* noise limits are as follows:

(i) *For takeoff calculated noise levels*—109 EPNdB for maximum takeoff weights of 176,370 pounds (80,000 kg) or more, reduced by 3.01 EPNdB per halving of the weight down to 89 EPNdB, after which the limit is constant.

(ii) *For flyover calculated noise levels*—108 EPNdB for maximum weights of 176,370 pounds (80,000 kg) or more, reduced by 3.01 EPNdB per halving of the weight down to 88 EPNdB, after which the limit is constant.

(iii) *For approach calculated noise levels*—110 EPNdB for maximum weights of 176,370 pounds (80,000 kg) or more, reduced by 3.01 EPNdB per halving of the weight down to 90 EPNdB, after which the limit is constant.

(3) *Stage 3* noise limits are as follows:

(i) For takeoff—For a helicopter having a maximum certificated takeoff weight of 176,370 pounds (80,000 kg) or more, the noise limit is 106 EPNdB, which decreases linearly