



**An tÚdarás Inniúil um
Thorann Aerárthaí**

**Aircraft Noise
Competent Authority**

Draft Regulatory Decision

Appendix B

Quota Count and Noise Certification Procedure

Determining Aircraft Quota Counts

Introduction

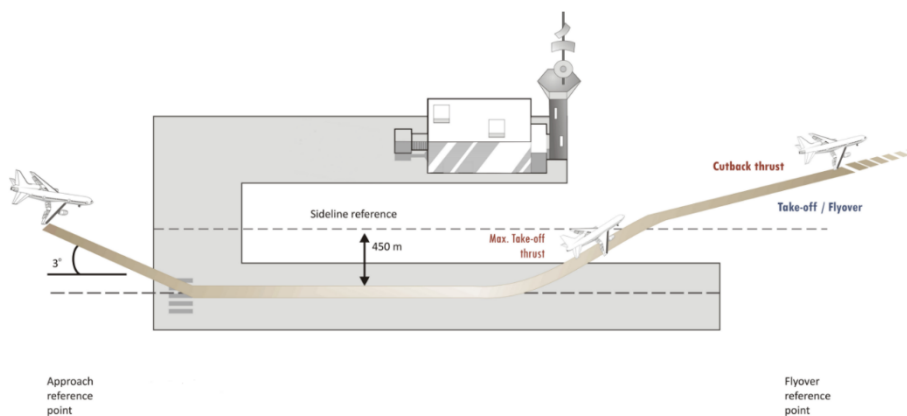
In 1993, the Quota Count (QC) system was first introduced by the UK, as part of a new night restrictions scheme for London Heathrow, Gatwick and Stansted airports, and has been gradually followed by an increasing number European airports.

The QC system relies on a count of aircraft movements (arrivals and departures) against a noise quota (in effect a noise budget), for each airport according to the QC rating. It reflects the contribution of an individual aircraft to the total noise impact around an airport, e.g., a QC/2.0 aircraft is deemed to have twice the impact of a QC/1.0 aircraft, a QC/4.0 aircraft has four times the impact and so on.

Methodology for calculating QC classification

International Standards and Recommended Practices for Aircraft Noise define three reference measurement points for noise certification as illustrated.

1. Approach reference point: under a 3-degree descent path, 2000 m from the runway threshold
2. Sideline reference point: 450 m to the side of initial climb at the longitudinal position
3. Flyover reference point: under the departure climb path, 6500 m from start of roll.



Figure

1: Aircraft noise certification reference measurement points (ref <https://www.icao.int/environmental-protection/Pages/Reduction-of-Noise-at-Source.aspx>)

The departure QC ratings are calculated by a simple average of the sideline and flyover noise levels, measured on at their respective reference point.

$$L_d = [EPNL (Sideline) + EPNL (Flyover)]/2$$

The approach reference point is much nearer to the aircraft flight path than the lateral and flyover points. Therefore, for the same level of measured noise at the reference points, an aircraft will have a larger noise impact and a bigger footprint on departure than arrival. Arrival Effective Perceived Noise Levels are adjusted downwards by 9 EPNdB in order to adjust for this difference, so that the noise QC classification for arrivals and departures reflects comparable numbers of people affected

$$La = EPNL (Approach) - 9$$

The present Quota Count System

The central feature of the QC system is that each aircraft is given a quota count rating according to how much noise it makes. The aircraft classifications are assigned separately for landing and take-off. The data used are aircraft certificate noise levels because these are:

- i. considered to be reliable indicators of aircraft noise performance
- ii. available for almost every civil transport aircraft
- iii. published and therefore readily applied by administrators of the scheme
- iv. correlated well with noise footprint areas

The metric used for aircraft certificates noise levels is Effective Perceived Noise Levels or EPNL and it is measured in EPNdB. EPNL metric is common for all the UK airports. The certified Effective Perceived Noise Levels or EPNLs, are grouped into 3 EPNdB - wide bands for practical QC purposes. The QC doubles with each increase of 3 EPNdB, which corresponds to doubling of noise energy.

The QCt of an aircraft on taking off or landing is to be calculated on the basis of the noise classification for that aircraft on take-off or landing as appropriate as follows:

Certified noise level (EPNdB)	Quota Count Classification
Greater than 101.9 EPNdB	16
99 - 101.9 EPNdB	8
96 – 98.9 EPNdB	4
93 – 95.9 EPNdB	2
90 – 92.9 EPNdB	1
87 – 89.9 EPNdB	0.5
84 – 86.9 EPNdB	0.25
81 – 83.9 EPNdB	0.125
Below 81 EPNdB	0

The EPNdB is defined in accordance with the following criteria:

- in the case of an aircraft certificated to the standards of Chapter 2, 3, 4, or 14 of ICAO Annex 16 (or the equivalent standards): the certificated approach noise level of the aircraft at its maximum certificated landing weight, minus 9 EPNdB;
- in the case of a light propeller-driven aircraft with a maximum take-off weight not exceeding 8,618 KG: the noise classification will be QC/0;

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- in the case of any other aircraft not certified to the standards of Chapter 2, 3, 4, 5, or 14 of ICAO Annex 16 (or the equivalent standards): the noise level indicated in relation to that aircraft in the noise data supplied for this purpose to the CAA.
- where the aircraft is certified to the standards of Chapter 3, 4, 5, or 14 of ICAO Annex 16 (or the equivalent standards): half the sum of the flyover and the sideline noise levels in EPNdB as measured at the certification points specified in that Annex during the noise certification of the aircraft at its maximum certificated take-off weight;
- where the aircraft is certificated to the standards of Chapter 2 of ICAO Annex 16 (or the equivalent standards): half the sum of the flyover and the sideline noise levels in EPNdB as measured at the certification points specified in that Annex during the noise certification of the aircraft at its maximum certificated take-off weight, plus 1.75 EPNdB;
- where the aircraft is a light propeller-driven aircraft with a maximum take-off weight not exceeding 8,618 KG: the noise classification will be QC/0; and iv. in the case of any other aircraft not certificated to the standards of Chapter 2, 3, 4, 5, or 14 of ICAO Annex 16 (or the equivalent standards): the noise level indicated in relation to that aircraft in the noise data supplied for this purpose to the CAA.

Airports operating the system have a fixed quota for each of the summer and winter seasons.

Noise limits can be set per aircraft, possibly depending on MTOW. These limits could relate to the certified noise level or to quota counts. Different limits could apply during the day and night. (e.g. by limiting certified noise levels, or restricting aircraft with a Quota Count > 8.0)