



London Airspace Consultation

Appendix J

Standard Tables of Aircraft Noise Impact

Representative aircraft L_{max} data

This Appendix provides representative L_{max} data as a function of aircraft height above ground, together with information on how the data have been generated and its uncertainty. These tables were produced by the Environmental Research & Consultancy Department of the Civil Aviation Authority (CAA).

Calculation Process

Data is derived from the UK civil Aircraft Noise Contour model, "ANCON" version 2. This has been used since 1995 to calculate noise contours at the designated London airports. Every summer the ANCON model is validated with hundreds of thousands of measurements obtained from around Heathrow, Gatwick and Stansted airports. The calculation process requires that noise levels are generated for locations beneath an aircraft flight track. Since each type of aircraft reaches a certain height at different distances after take-off (and likewise before landing prior to intercepting the standard 3° glide path), The CAA Environmental Research & Consultancy Department (ERCD) identified the unique distance from start-of-take-off roll and to touchdown, for each ANCON aircraft type category at 500ft intervals. These locations were then used to determine the corresponding mean L_{max} levels for departure and arrival operations for each ANCON type. Tables 2 & 3 below provide combined tables of representative L_{max} levels.

Aircraft groupings

In order to simplify the data, it has been grouped in logical categories of aircraft size. Data has then been linearly averaged across different specific types and across the airports to provide an overall average L_{max} value for each altitude and operating mode. The specific groupings chosen are listed in Table 1.

Table 1: Aircraft groupings and their respective ANCON types

Aircraft Grouping	Specific ANCON Types
50-70 seat turboprop	ATR-42, ATR-72, DHC Dash-8-100/200/300/400
50 seat regional jet	Bombardier CRJ, Embraer 135/145
70-90 seat regional jet	Bombardier CRJ700/900, Embraer 170/175/190/195
125-180 seat single-aisle 2-eng jet	Airbus A318/319/320/321, Boeing 737-600/700/800/900
250 seat twin-aisle 2-eng jet	Airbus A330, Boeing 767-300/400
300-350 seat twin-aisle jet	Airbus A340-200/300/500/600, Boeing 777-200/300/ER
400 seat 4-eng jet	Boeing 747-400
500 seat 4-eng jet	Airbus A380

Using the groupings listed in Table 1, Tables 2 and 3 below provide representative L_{max} data for arrivals and departures respectively.

Table 2: Arrivals L_{max} levels by aircraft grouping

Height (ft)	Turbo-prop	50 seat regional jet	70-90 seat regional jet	125-180 seat single-aisle 2-eng jet	250 seat twin-aisle 2-eng jet	300-350 seat twin-aisle jet	400 seat 4-eng jet	500 seat 4-eng jet
1000-2000	79-70	73-63	77-67	77-69	84-74	83-73	86-77	85-78
2000-3000	70-66	63-56	67-61	69-64	74-68	73-67	77-71	78-72
3000-4000	66-64	56-55	61-57	64-61	68-64	67-63	71-67	72-68
4000-5000	64-62		57-56	61-59	64-60	63-60	67-64	68-65
5000-6000	62-61		56-55	59-57	60-58	60-57	64-61	65-62
6000-7000	61-59			57-56	58-56	57-56	61-59	62-60
7000-8000	59-57			56-55	56-55	56-56	59-57	60-58
8000-9000	57-57					56-55	57-56	58-56
9000-10000	57-56						56-56	56-55
10000-11000	56-55						56-55	
11000-12000								

Table 3: Departure L_{max} levels by aircraft grouping

Height (ft)	Turbo-prop	50 seat regional jet	70-90 seat regional jet	125-180 seat single-aisle 2-eng jet	250 seat twin-aisle 2-eng jet	300-350 seat twin-aisle jet	400 seat 4-eng jet	500 seat 4-eng jet
1000-2000	78-71	78-70	85-75	85-75	92-83	90-81	92-84	91-84
2000-3000	71-67	70-65	75-68	75-70	83-77	81-75	84-79	84-80
3000-4000	67-64	65-60	68-64	70-66	77-73	75-71	79-75	80-76
4000-5000	64-62	60-57	64-61	66-63	73-69	71-67	75-72	76-73
5000-6000	62-60	57-55	61-58	63-60	69-66	67-64	72-69	73-71
6000-7000	60-58		58-56	60-59	66-64	64-62	69-67	71-68
7000-8000	58-56		56-56	59-58	64-61	62-60	67-64	68-66
8000-9000	56-56		56-55	58-57	61-59	60-58	64-62	66-65
9000-10000	56-55			57-56	59-58	58-57	62-60	65-63
10000-11000				56-56	58-57	57-56	60-60	63-62
11000-12000				56-56	57-56	56-55	60-59	62-60
12000-13000				56-55	56-56		59-58	60-59
13000-14000					56-55		58-58	59-58
14000-15000							58-57	58-55
15000-16000							57-57	
16000-17000							57-57	
17000-18000							57-56	
18000-19000							56-55	
19000-20000								

Footnote: Table 2 & 3 Data uncertainty

Data reported are average dBA maximum noise levels, representative of operations in the vicinity of major UK airports. Approximately 68 per cent of individual measured values will typically lie within ± 2.5 dB of the average value, although at higher altitudes, this value may increase up to 5dB. However, because large samples of data are obtained, the confidence interval about the mean will be significantly smaller, e.g. less than 1dB.

Table of Equivalence

The L_{max} values may be compared to the table below for everyday equivalents. Additional overflight videos are provided on the webpage www.londonairspaceconsultation.co.uk to help stakeholders understand what aircraft at various altitudes may look and sound like.

Noise	Noise level (dBA)
Chainsaw, 1m distance	110
Disco, 1m from speaker	100
Diesel truck pass-by, 10m away	90
Kerbside of busy road, 5m away	80
Vacuum cleaner, distance 1m	70
Conversational speech, 1m	60
Quiet office	50
Room in quiet, suburban area	40
Quiet library	30