

Noise from A320 family operations at Luton Airport: 1 May 2024 to 30 April 2026

Executive Summary

1. An analysis of arrival and departure noise measurements for A320 family operations at Luton Airport has been undertaken using data recorded over a two-year period between 1 May 2024 and 30 April 2026. The dataset covered operations from neo and ceo variants of the A320 and A321 aircraft.
2. Since Wizz Air, easyJet and Jet2 account for the vast majority of A320neo family operations at Luton, the study has focussed on measurement data for these three airlines.
3. The measured departure results confirmed that the neo variants were quieter on departure than the ceo variants over the study period at Luton, a finding consistent with previous analysis presented to ANEG.
4. The average measured noise differences between the neos and the ceos were somewhat larger for easyJet aircraft (CFM LEAP vs. CFM56 engines) compared to Wizz Air (PW1100G vs. V2500 engines), although less so in terms of the SEL noise metric. SEL is directly correlated with long-term noise exposure metrics such as LAeq or Lden.
5. Based on certificated noise data, the departure noise performance of the PW1100G and CFM LEAP-powered neo variants at equivalent take-off-weights would be expected to be quite similar.
6. The measured departure results indicated however that the PW1100G-powered neos at Luton were, on average, about 1 to 2 dB noisier compared to the CFM LEAP-powered neos. The extent to which different airline operating weights and procedures on take-off might account for these differences has not been investigated.
7. The measured arrival results showed that the neo variants were quieter than the ceo variants over the study period, a finding consistent with the analysis presented for departures.
8. Based on certificated noise data, the arrival noise performance of the PW1100G and CFM LEAP-powered neo variants would be expected to be quite similar. The measured arrival results indicated that this was broadly the case.

Introduction

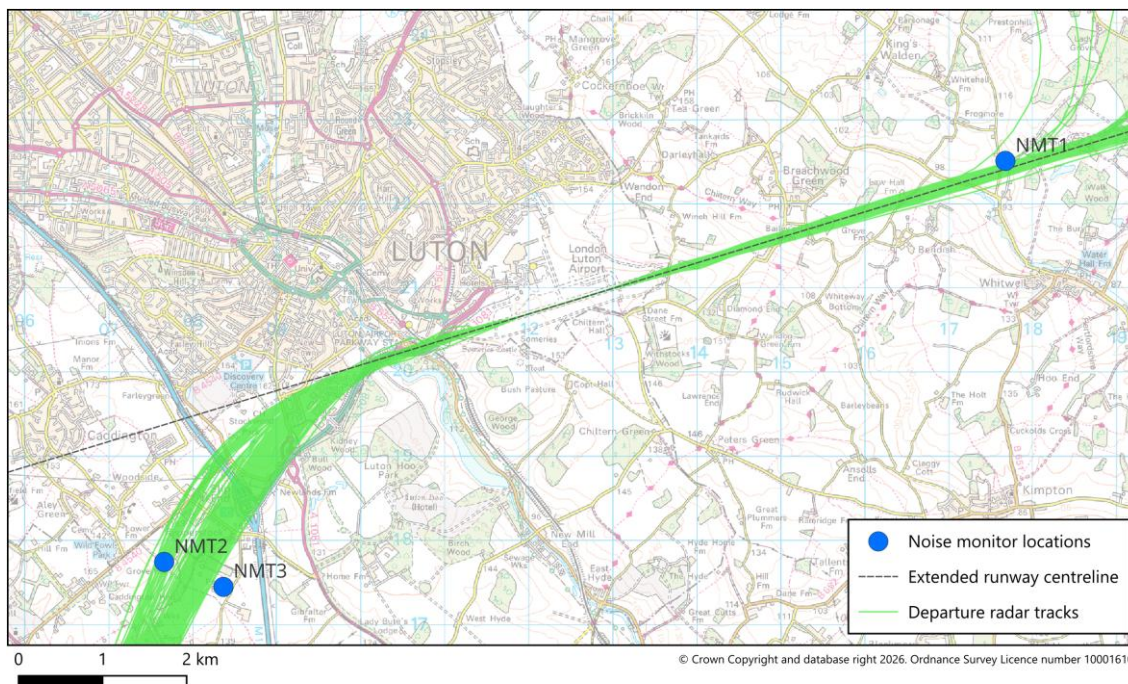
9. At the ANEG meeting held on 16 September 2025, ERCD presented an analysis of departure noise measurements for A320 family operations at Luton and Gatwick airports. The work arose from ongoing concerns from the local community at Luton Airport regarding the relative noise performance of newer A320neo family aircraft compared to their older A320ceo family counterparts.¹
10. The dataset included departure noise measurements recorded at three of Luton's noise monitoring terminals (NMTs) over the first six months of 2024 and data from one of Gatwick's NMTs for summer 2024.
11. The analysis showed that in all cases, the neo variants were quieter than the equivalent ceo variants over the study periods. It was noted, however, that the average measured noise differences between neos and ceos were generally larger for the A320 family aircraft, compared to the differences for the A321s. The analysis also noted that A321neos are proportionally heavier than their ceo counterparts, A321neos being 6-8 tonnes heavier compared with A320neos being 2-3 tonnes heavier.
12. The A320neo noise issue was subsequently raised by a community representative at the ANEG meeting held on 25 February 2026, who felt it would be worthwhile carrying out a wider noise study.
13. The DfT took an action from that meeting to consider the issue and subsequently instructed ERCD to conduct a further targeted noise study limited to Luton Airport operations. This paper summarises the results from the study, which is comprised of the following analysis:
 - comparison of measured noise levels across the neo and ceo variants.
 - comparison of measured noise levels across the different neo engine models.
 - comparison of certificated noise levels across the different neo engine models.
14. Whereas the previous study focused on departure noise, this paper also considers noise from arrivals.

¹ The acronyms "ceo" and "neo" stand for "current engine option" and "new engine option", respectively.

Methodology

15. In preparation for the study, ERCD contacted Luton Airport to request noise measurement data from the airport's fixed NMTs. The requested dataset covered arrival and departure noise events for all A320 family operations recorded over the two-year period between 1 May 2024 and 30 April 2026.
16. Figure 1 shows the locations of Luton's current fixed NMTs relative to a sample of A320 departure tracks.

Figure 1 Fixed NMT locations at Luton Airport



17. To keep the study proportionate, the analysis presented in this paper covers noise data from NMT1 only. The site is located approximately 6.5 km from start-of-roll for easterly departures and 4.5 km from touchdown for westerly arrivals. The site's proximity to the extended runway centreline means that both westerly arrivals and easterly departures pass almost directly overhead the monitor.
18. By comparison, westerly departures are typically more scattered when turning in a southerly direction over NMT2 and/or NMT3, potentially making direct noise comparisons between different departure operations less straightforward.²

² Although not analysed in detail, a preliminary examination of departure noise measurements from the westerly NMTs showed similar trends to the results presented in this paper for NMT1.

19. Since Wizz Air, easyJet and, to a lesser extent, Jet2 account for the vast majority of A320neo family operations at Luton, the analysis for this study was limited to data from these three airlines.³ Noise measurements acquired in high wind speeds (>10 m/s) were also excluded.
20. Results are reported in terms of maximum sound level (L_{ASmax}) and also Sound Exposure Level (SEL), which accounts for the duration of the noise event as well as its intensity.

Departure noise results

Comparison of measured departure noise levels across the neo and ceo variants

21. Aircraft that are flying further will generally be heavier because they are carrying more fuel and will therefore require more thrust to achieve the same climb performance, all other things being equal.
22. Recognising the possible effect of distance flown (stage length) on measured departure noise levels, the data have been analysed separately for short-haul flights (under 1,500 km) and medium-haul flights (between 1,500 and 3,500 km).
23. Average (mean) L_{ASmax} noise levels for short-haul and medium-haul A320 departures at Luton are presented in Figures 2 and 3, respectively. Error bars representing the 95% confidence intervals have also been plotted. Figures 4 and 5 present equivalent L_{ASmax} results for short-haul and medium-haul A321 departures. The corresponding figures for SEL are presented in Appendix A for reference. A full set of tabulated results is provided in Appendix B.
24. In all the figures, measured noise levels for the neo variants, which are powered either by CFM LEAP or PW1100G engines, are compared with corresponding data for the older ceo variants, powered by CFM56 or V2500 engines.
25. Note that in Figures 4 and 5 (and elsewhere), a direct comparison between the A321neo and A321ceo for Jet2 was not possible because the airline typically doesn't operate A321ceos at Luton.

³ The Wizz Air dataset includes operations for subsidiaries Wizz Air Malta and Wizz Air UK. The easyJet dataset includes operations for subsidiaries easyJet Europe and easyJet Switzerland.

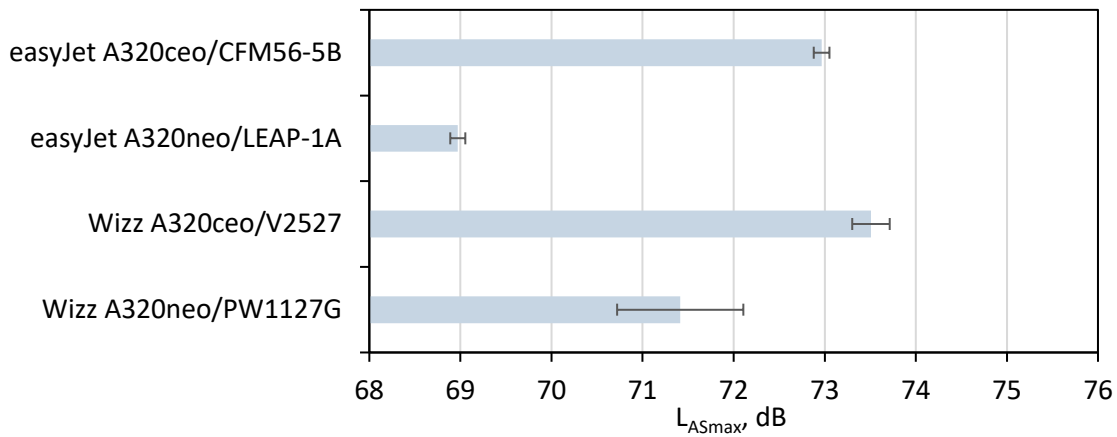
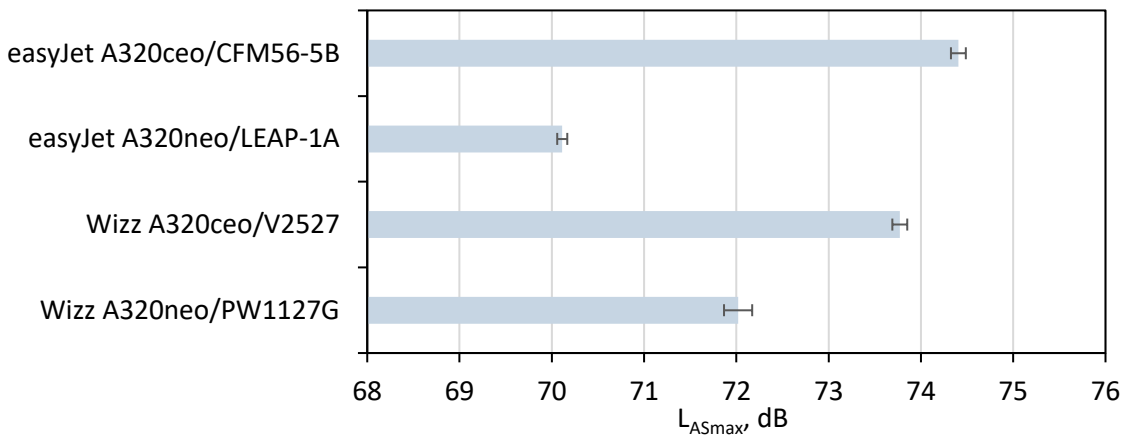
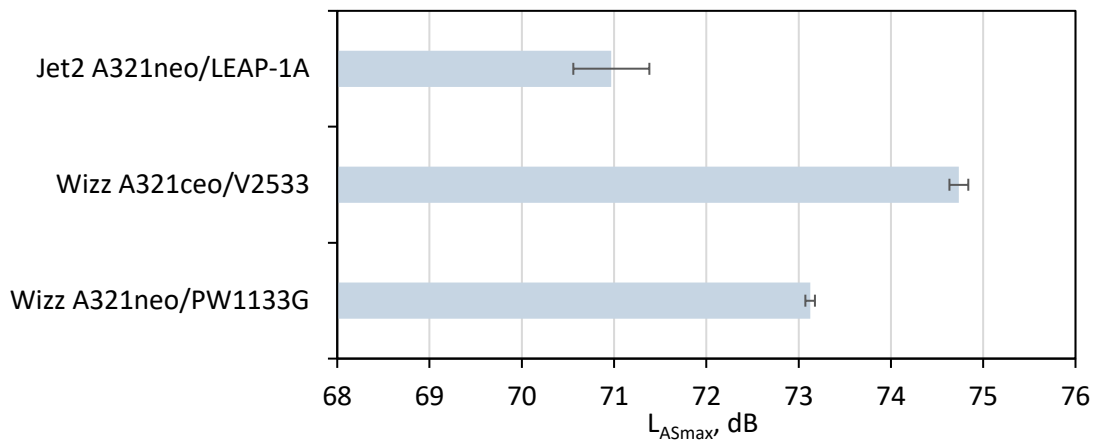
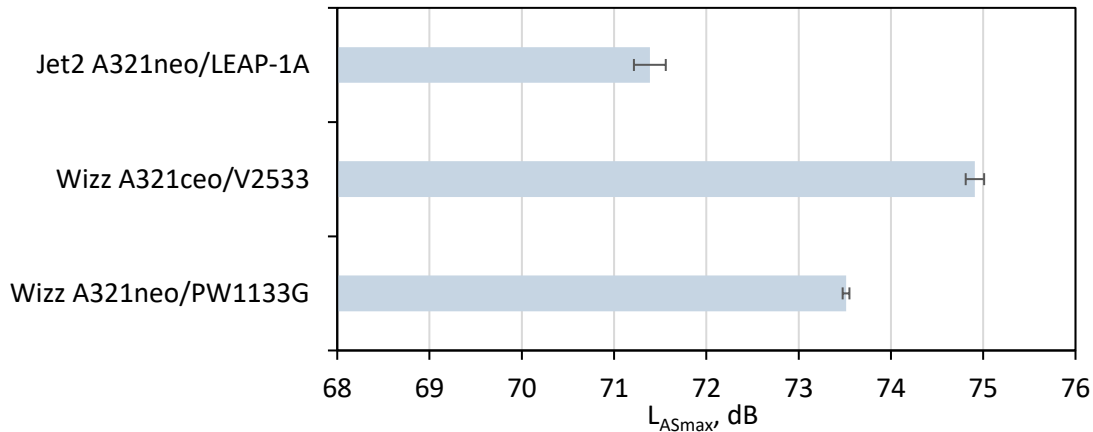
Figure 2 Average L_{ASmax} noise levels for short-haul A320 departures (NMT1)**Figure 3** Average L_{ASmax} noise levels for medium-haul A320 departures (NMT1)**Figure 4** Average L_{ASmax} noise levels for short-haul A321 departures (NMT1)

Figure 5 Average L_{ASmax} noise levels for medium-haul A321 departures (NMT1)



26. The results show that in every case, the neo variants were quieter on departure than the ceo variants over the study period, a finding consistent with previous analysis presented to ANEG. The results also show that in every case, the medium-haul departures were slightly noisier, on average, than the corresponding short-haul group, which was as expected.
27. For reference, Table 1 summarises the average departure noise level differences between the neo and ceo variants for equivalent easyJet and Wizz Air operations.

Table 1 Average measured departure noise level differences at Luton (NMT1):
neo noise level *minus* ceo noise level

Aircraft type and stage length	Noise difference: neo <i>minus</i> ceo, dB	
	L_{ASmax}	SEL
easyJet A320 short-haul	-4.0	-3.5
easyJet A320 medium-haul	-4.3	-3.6
Wizz Air A320 short-haul	-2.1	-2.3
Wizz Air A320 medium-haul	-1.8	-2.0
Wizz Air A321 short-haul	-1.6	-2.5
Wizz Air A321 medium-haul	-1.4	-2.4

28. It is noted that the average measured noise differences between the neos and the ceos are somewhat larger for the easyJet aircraft (CFM LEAP vs. CFM56) compared to Wizz Air (PW1100G vs. V2500).
29. In addition, for the Wizz Air comparisons, the average SEL differences are slightly larger than for L_{ASmax} , whereas the trend is reversed for the easyJet comparisons (and the SEL differences are slightly smaller than for L_{ASmax}). It was

beyond the scope of this study to investigate possible reasons for these trends. It should be noted that SEL is a noise metric that accounts for the duration of the top 10 dB of the noise event. This is also the case for the certification noise metric EPNL. In contrast, L_{ASmax} is simply the maximum level measured during a noise event. Long-term noise exposure metrics such as L_{Aeq} or L_{den} are based on a summation of SEL events, hence SEL is directly correlated with long-term noise exposure.

Comparison of measured departure noise levels across the different neo engine models: PW1100G vs. CFM LEAP

30. As noted previously, A320neo and A321neo aircraft can be powered by two different engine models: PW1100G or CFM LEAP. In this case, Wizz Air's neo fleet are powered by PW1100G engines, whereas easyJet and Jet2's neos are powered by CFM LEAP engines.
31. Table 2 summarises the average measured departure noise level differences between the different engine models for each neo type at Luton. The individual measured departure noise levels for each neo engine variant have also been plotted against the corresponding minimum slant distances in Appendix C for information.

Table 2 Average measured departure noise level differences for neo aircraft (NMT1): PW1100G noise level *minus* CFM LEAP noise level

Aircraft type and stage length	Noise difference: PW1100G <i>minus</i> CFM LEAP, dB	
	L_{ASmax}	SEL
A320neo short-haul	+2.4	+1.7
A320neo medium-haul	+1.9	+1.2
A321neo short-haul	+2.1	+1.0
A321neo medium-haul	+2.1	+1.1

32. The measured departure results indicate that the PW1100G-powered neos are, on average, about 1 to 2 dB noisier compared to the CFM LEAP-powered neos, with slightly smaller differences exhibited in terms of SEL than L_{ASmax} .
33. When considering the results in Table 2, it should be remembered that the PW1100G and CFM LEAP datasets are comprised of measurements from different airlines, each with likely different operating procedures on take-off (even after grouping by stage length), meaning that a direct comparison of the measured noise levels for the different neo engine models may not always be appropriate. The extent to which different airline operating weights and departure procedures might account for these differences has not been investigated.

Comparison of certificated departure noise levels across the different neo engine models: PW1100G vs. CFM LEAP

34. Table 3 presents the certificated Lateral and Flyover EPNL levels for representative variants of the PW1100G and CFM LEAP-powered A320neo and A321neo aircraft, each at the same maximum take-off weight (MTOW).^{4,5}

Table 3 Certificated departure noise levels for A320neo and A321neo variants

Aircraft	Engine	MTOW, kg	Lateral, EPNdB	Flyover, EPNdB	Average Departure, EPNdB
A320-251N	CFM LEAP-1A26	73,500	86.4	79.3	82.9
A320-271N	PW1127G1-JM	73,500	86.6	79.7	83.2
Difference, PW1100G <i>minus</i> CFM LEAP:			+0.2	+0.4	+0.3
A321-251NX	CFM LEAP-1A32	89,000	88.9	82.1	85.5
A321-271NX	PW1133GA-JM	89,000	87.8	83.1	85.5
Difference, PW1100G <i>minus</i> CFM LEAP:			-1.1	+1.0	0.0

35. Before considering the certification data it is important to understand the differences between certification testing and normal airline departure procedures.
36. For certification, the test aircraft takes off at maximum engine power and climbs as quickly as possible. The Lateral noise level is measured on a 450 m sideline location during this phase to represent the maximum noise experienced during take-off. Because the Lateral noise measurement is offset from the centreline, the maximum Lateral noise event typically occurs around an altitude of 1,000 ft (305 m). In a separate test procedure, just before reaching the 6.5 km flyover test point, engine power is cut back sufficiently to maintain a safe rate of climb but also to minimise the certificated Flyover noise level. For a twin-engine aircraft such as the A320, the Flyover cutback altitude will be at least 1,500 ft.
37. By comparison, aircraft in normal operation typically use a reduced level of thrust on take-off (to minimise engine wear) and then cut back during the climb phase, but not usually as deeply as for certification. This generally means that operational Lateral noise is lower than certification whereas operational Flyover noise is higher than certification.

⁴ EPNL (Effective Perceived Noise Level) is the noise evaluation metric used for aircraft certification. Its measurement involves analysis of the frequency spectra of noise events as well as the duration of the sound.

⁵ It should be noted that a large number of possible aircraft variants have been certificated for the A320neo and A321neo models across a range of approved MTOWs, many of which with engine modifications that result in slight variations in certificated noise level compared to the values shown in Table 3. See [Aircraft noise certificate | UK Civil Aviation Authority](#) for further information.

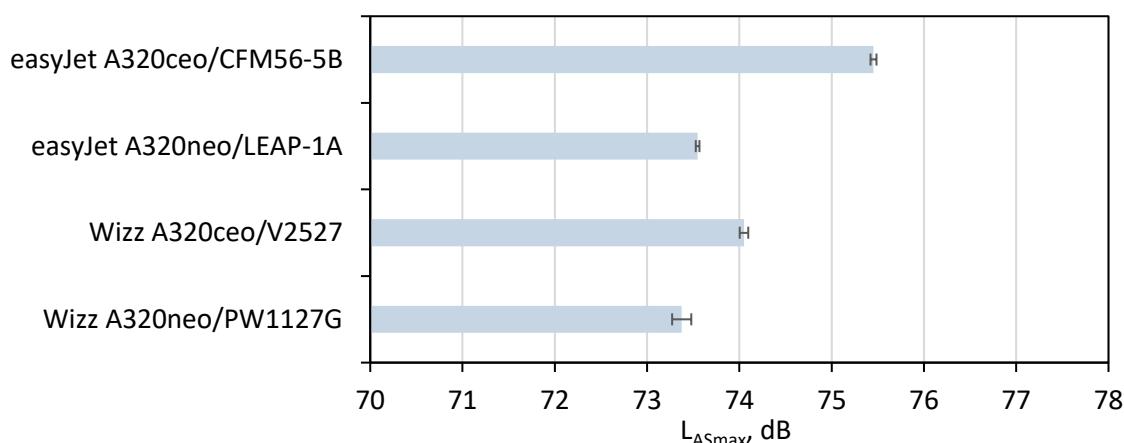
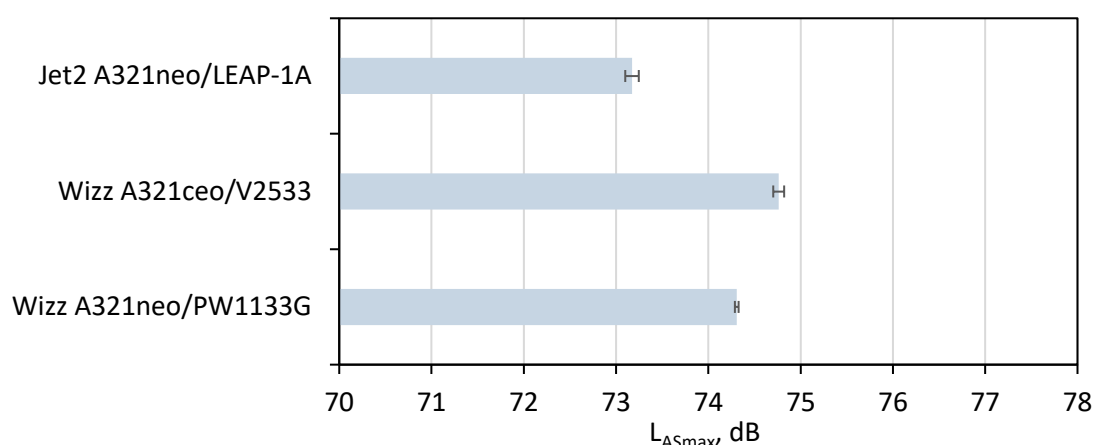
38. It has been established that a simple arithmetic average of the levels at the Lateral and Flyover reference points appropriately reflects the balance between noise before and after cutback and serves as a reasonable indicator of overall departure noise performance.⁶ Thus, in each case the average of the Lateral and Flyover noise level is also shown in the right-hand column of Table 3.
39. Based on the average certificated departure levels shown in Table 3, the noise performance of the PW1100G and CFM LEAP-powered neo variants at equivalent take-off-weights would be expected to be quite similar. This appears somewhat contrary to the measured noise results shown in Table 2. However, it should be remembered that the measured noise data are limited to a single flyover location. It is also noted that in Table 3, the PW1100G-powered A321neo is 1 EPNdB noisier than the CFM LEAP variant at the Flyover certification point. It was beyond the scope of the study to investigate this issue in more detail.

Arrival noise results

Comparison of measured arrival noise levels across the neo and ceo variants

40. Average (mean) L_{ASmax} noise levels for A320 arrivals at Luton are presented in Figure 6. Error bars representing the 95% confidence intervals have also been plotted. Figure 7 presents the equivalent average L_{ASmax} results for A321 arrivals.
41. In each figure, measured approach noise levels for the neo variants are compared with corresponding data for the older ceo variants. The corresponding figures for SEL are presented in Appendix A and tabulated results are provided in Appendix B.

⁶ [ERCD Report 0204](#), *Review of the Quota Count (QC) System: Re-analysis of the Differences between Arrivals and Departures*, CAA, 2002

Figure 6 Average L_{ASmax} noise levels for A320 arrivals (NMT1)**Figure 7** Average L_{ASmax} noise levels for A321 arrivals (NMT1)

42. The arrival results show that the neo variants were quieter than the ceo variants over the study period, a finding consistent with the analysis presented for departures. For reference, Table 4 summarises the average arrival noise level differences between the neo and ceo variants for easyJet and Wizz Air operations.

Table 4 Average measured arrival noise level differences at Luton (NMT1):
neo noise level *minus* ceo noise level

Aircraft type	Noise difference: neo <i>minus</i> ceo, dB	
	L_{ASmax}	SEL
easyJet A320	-2.0	-1.3
Wizz Air A320	-0.6	-0.6
Wizz Air A321	-0.5	-0.2

43. Although the differences for arrivals are smaller in absolute terms, the results in Table 4 show a similar trend to the departure results in Table 1: The average measured noise differences between the neos and the ceos are slightly larger for the easyJet aircraft (CFM LEAP vs. CFM56) compared to Wizz Air (PW1100G vs. V2500).

Comparison of measured arrival noise levels across the different neo engine models: PW1100G vs. CFM LEAP

44. Table 5 summarises the average measured arrival noise level differences between the different engine models for each neo aircraft type at Luton.

Table 5 Average measured arrival noise level differences (NMT1):
PW1100G-powered neo *minus* CFM LEAP-powered neo

Aircraft type	Noise difference: PW1100G <i>minus</i> CFM LEAP, dB	
	L _{ASmax}	SEL
A320neo	-0.1	-0.4
A321neo	+1.1	+0.9

45. While the measured differences for the A320neo are small enough to be considered negligible, the results for the A321neo indicate that the PW1100G-powered aircraft were slightly noisier, on average by about 1 dB, compared to the CFM LEAP-powered aircraft.

Comparison of certificated arrival noise levels across the different neo engine models: PW1100G vs. CFM LEAP

46. Table 6 presents the certificated approach EPNL levels for representative variants of the PW1100G and CFM LEAP-powered A320neo and A321neo aircraft, each at the same maximum landing weight (MLW).

Table 6 Certificated approach noise levels for A320neo and A321neo variants

Aircraft	Engine	MLW, kg	Approach Level, EPNdB
A320-251N	CFM LEAP-1A26	67,400	92.3
A320-271N	PW1127G1-JM	67,400	92.4
Difference, PW1100G <i>minus</i> CFM LEAP:			+0.1
A321-251NX	CFM LEAP-1A32	77,300	94.0
A321-271NX	PW1133GA-JM	77,300	94.5
Difference, PW1100G <i>minus</i> CFM LEAP:			+0.5

47. Based on their certificated approach noise levels, the relative noise performance of the PW1100G and CFM LEAP-powered neo variants would be expected to be quite similar. This is largely reflected in the measured arrival results shown in Table 5. Although the PW1100G-powered A321neo was measured about 1 dB noisier on arrival than the CFM LEAP variant, the relative difference compared to certification (+1 dB vs. +0.5 EPNdB) is considered sufficiently small to be negligible.

APPENDIX A

Sound Exposure Level (SEL) figures

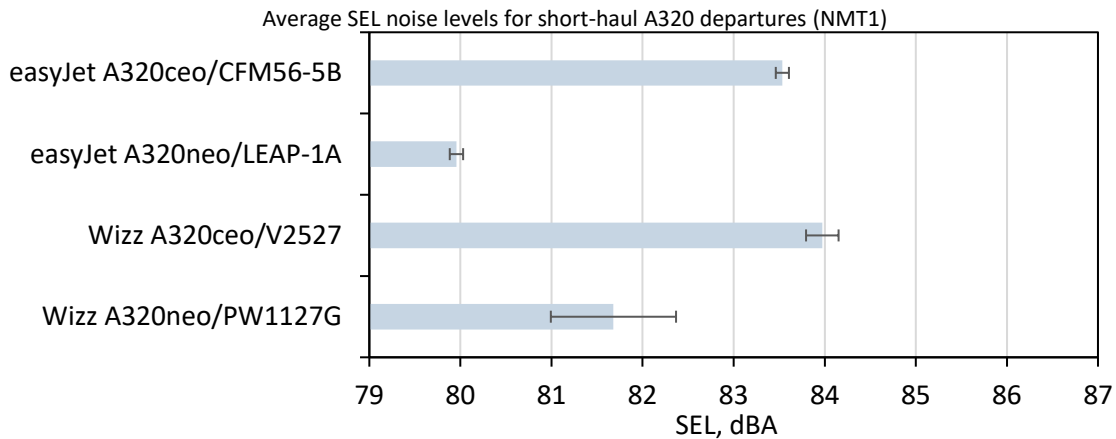
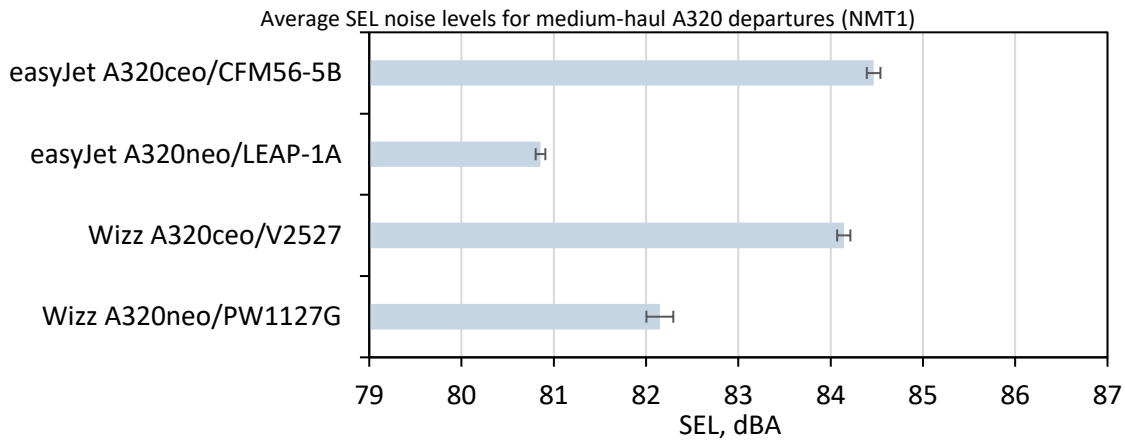
Figure A1 Average SEL noise levels for short-haul A320 departures (NMT1)**Figure A2** Average SEL noise levels for medium-haul A320 departures (NMT1)

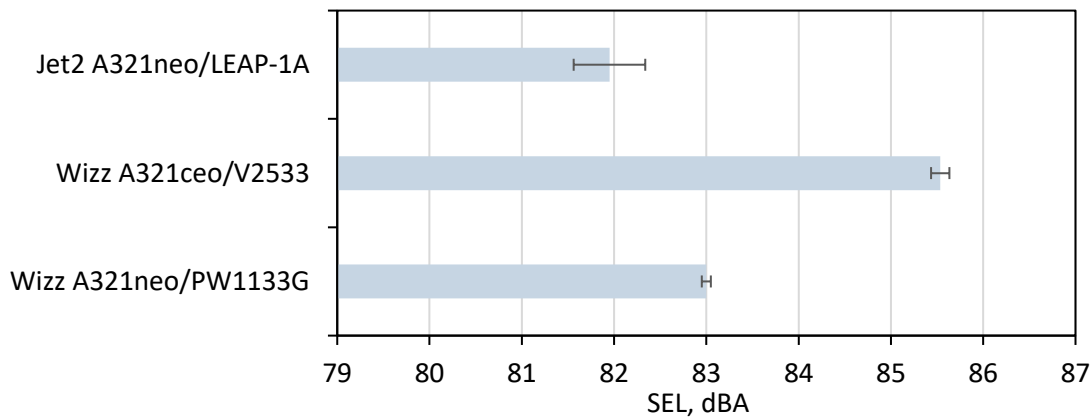
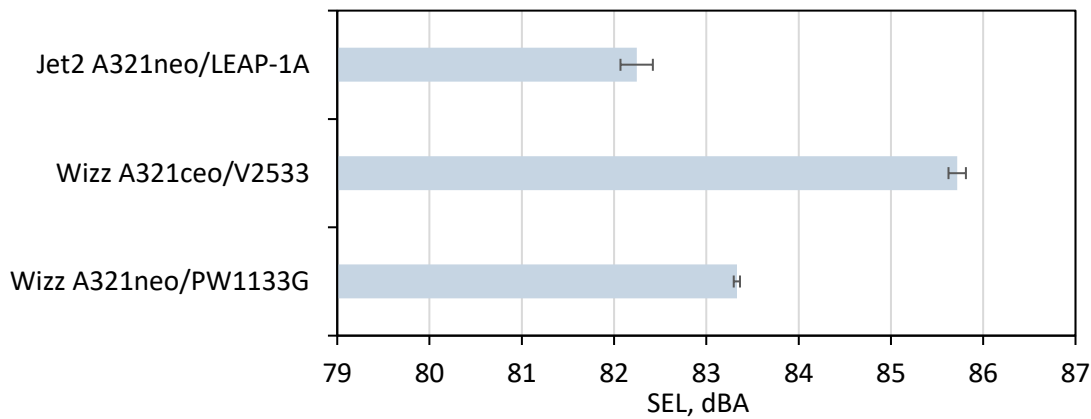
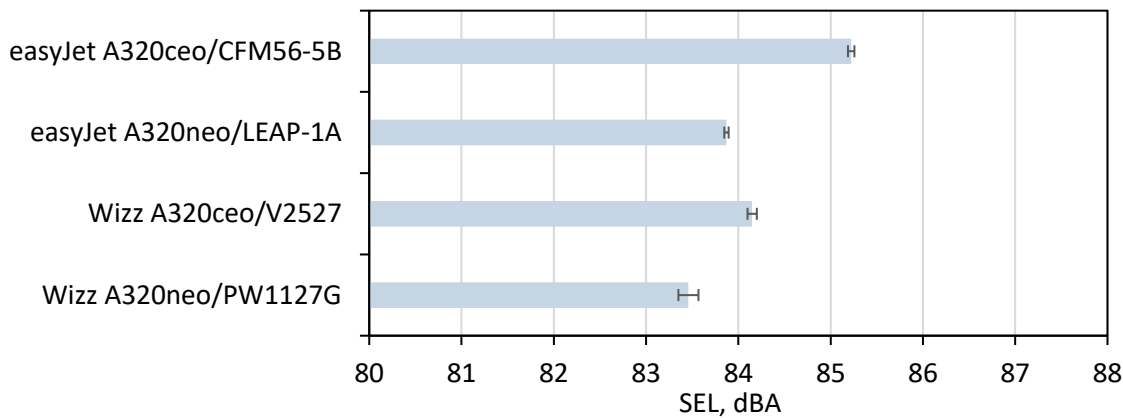
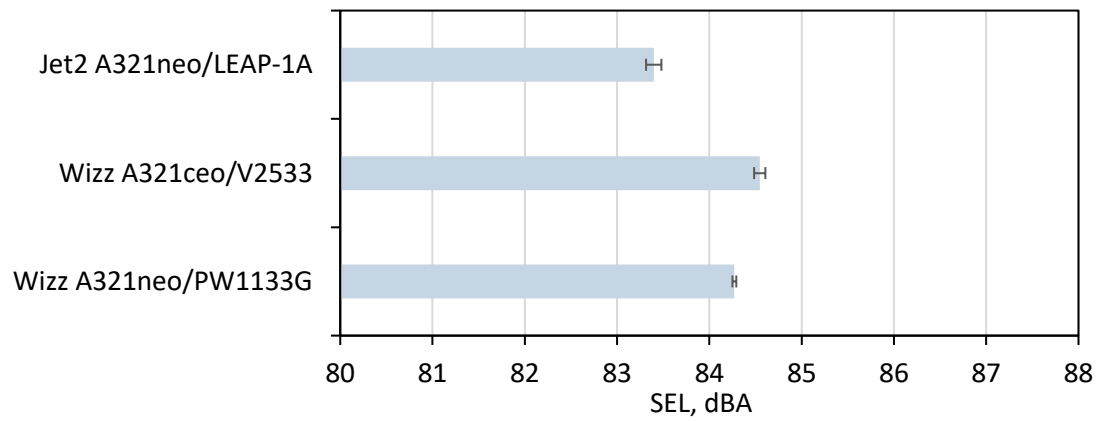
Figure A3 Average SEL noise levels for short-haul A321 departures (NMT1)**Figure A4** Average SEL noise levels for medium-haul A321 departures (NMT1)**Figure A5** Average SEL noise levels for A320 arrivals (NMT1)

Figure A6 Average SEL noise levels for A321 arrivals (NMT1)

APPENDIX B

Tabulated L_{ASmax} and SEL results**Table B1** Average measured departure noise levels at Luton (NMT1)

Airline	Aircraft Type	Stage length	L_{ASmax} , dB		SEL, dBA		Count
			Mean	Std Dev	Mean	Std Dev	
EasyJet	A320ceo/CFM56-5B	Short-haul	73.0	2.0	83.5	1.7	2,012
EasyJet	A320ceo/CFM56-5B	Medium-haul	74.4	1.4	84.5	1.3	1,140
EasyJet	A320neo/LEAP-1A	Short-haul	69.0	1.9	80.0	1.7	2,114
EasyJet	A320neo/LEAP-1A	Medium-haul	70.1	1.6	80.9	1.5	3,207
Wizz Air	A320ceo/V2527	Short-haul	73.5	1.6	84.0	1.4	248
Wizz Air	A320ceo/V2527	Medium-haul	73.8	1.6	84.1	1.4	1,560
Wizz Air	A320neo/PW1127G	Short-haul	71.4	1.3	81.7	1.2	15
Wizz Air	A320neo/PW1127G	Medium-haul	72.0	1.4	82.1	1.3	308
Jet2	A321neo/LEAP-1A	Short-haul	71.0	1.8	82.0	1.7	74
Jet2	A321neo/LEAP-1A	Medium-haul	71.4	1.6	82.2	1.6	320
Wizz Air	A321ceo/V2533	Short-haul	74.7	1.3	85.5	1.2	609
Wizz Air	A321ceo/V2533	Medium-haul	74.9	1.3	85.7	1.3	704
Wizz Air	A321neo/PW1133G	Short-haul	73.1	1.5	83.0	1.4	3,239
Wizz Air	A321neo/PW1133G	Medium-haul	73.5	1.4	83.3	1.3	5,493

Table B2 Average measured arrival noise levels at Luton (NMT1)

Airline	Aircraft Type	L _{ASmax} , dB		SEL, dBA		Count
		Mean	Std Dev	Mean	Std Dev	
EasyJet	A320ceo/CFM56-5B	75.5	1.2	85.2	1.3	5,226
EasyJet	A320neo/LEAP-1A	73.5	1.0	83.9	1.1	9,079
Wizz Air	A320ceo/V2527	74.0	1.3	84.1	1.5	3,181
Wizz Air	A320neo/PW1127G	73.4	1.2	83.5	1.3	516
Jet2	A321neo/LEAP-1A	73.2	0.9	83.4	1.1	642
Wizz Air	A321ceo/V2533	74.8	1.4	84.5	1.4	2,132
Wizz Air	A321neo/PW1133G	74.3	1.2	84.3	1.3	13,996

APPENDIX C

Noise level versus minimum slant distance for A320neo and A321neo departures at Luton

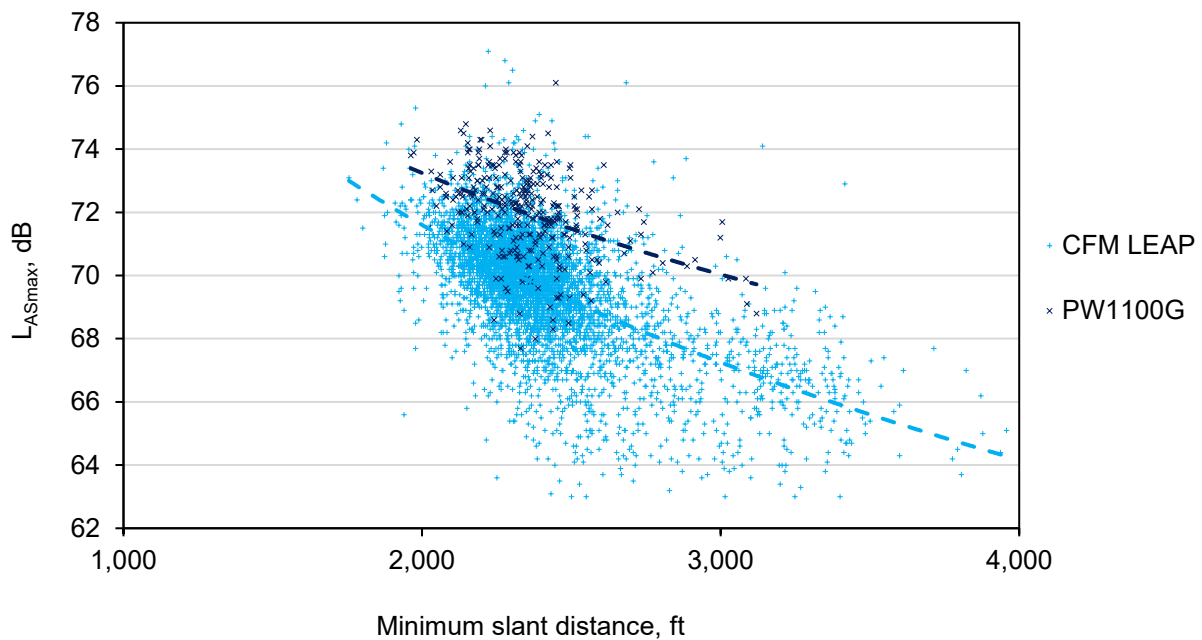
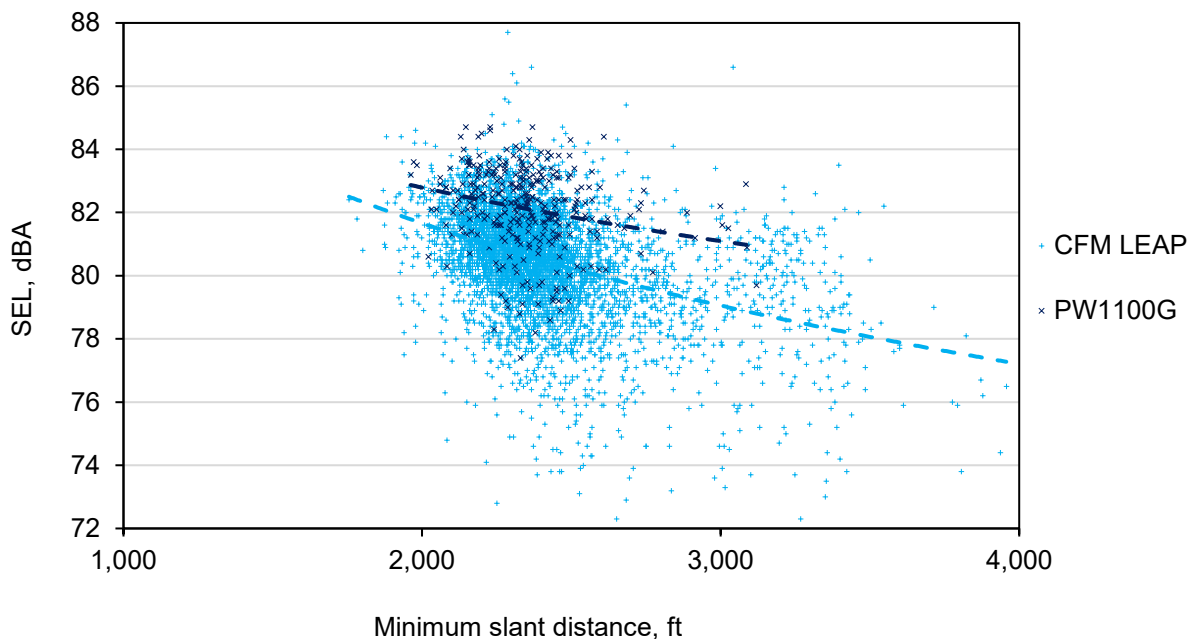
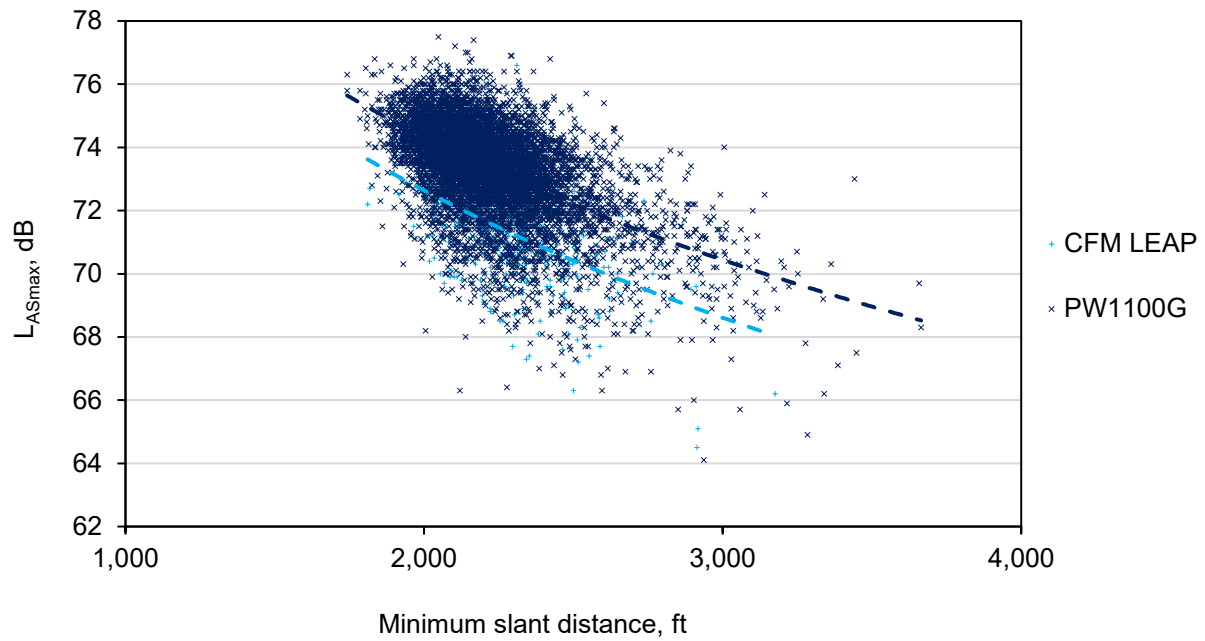
Figure C1 L_{ASmax} versus minimum slant distance for all A320neo departures (NMT1)**Figure C2** SEL versus minimum slant distance for all A320neo departures (NMT1)

Figure C3 L_{ASmax} versus minimum slant distance for all A321neo departures (NMT1)**Figure C4** SEL versus minimum slant distance for all A321neo departures (NMT1)