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Barajas Airport (Madrid)

IATA/ICAO CODE:	MAD/LEMD
CITY:	Madrid
COUNTRY:	Spain

AIRPORT CONTACT

Information updated by the airport 2/2011

Name:	Paloma Librero Pintado	Maria Angeles Roche Pereda
Title:	Jefe División Medio Ambiente	Head of D.I.A. Development Environmental Division
Airport:	Aeropuerto de Madrid-Barajas	Aeropuerto de Madrid-Barajas
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Airport Web Site: Madrid-Barajas Airport

ELEVATION: 2000 ft

RUNWAY INFORMATION				
Orientation	Length (m)	Displaced Threshold (m)	Glide Slope(deg)	Width (m)
15R/33L	4100	33L/1050	-	60
15L/33R	3500	33R/500	-	60
18L/36R	3500	18L/697	-	60
18R/36L	4349	18R/984	-	60

NOISE ABATEMENT PROCEDURES

1. The following procedures have been established to avoid excessive noise to the surroundings of Madrid/Barajas airport.

2. These procedures are applicable to every landing and takeoff. Non compliance with these procedures will be cause of sanctions to aircraft operators.

3. Pilots may omit these procedures only when requested by aircraft safety.

4. Operators which can not comply with these procedures shall submit to the correspondent authority the procedure that may apply to this purpose for its possible approval.

5. The term night is applicable to the time period comprised between 2300-0700 (local time) and day time to 0700-2300 (local time)

6. **In North configuration:**

RWY 36L:

- Usable for take-off at day time and night time.
- SID BARDI1X, BARDI1AX, CCS1X, CCS1AX, SIE1X, VTB1AX, VTB1XE, ZMR1AX, ZMR1XN are mandatory for aircraft included in the list shown below.

Aircraft not included in the list are allowed to use SID BARDI1Y, BARDI1AY, CCS1Y, CCS1AY, SIE2L, SIE1AL, VBT1AY, VTB1YD, ZMR2L, ZMR1AL.

Aircraft List	
AN-72	L101
AN-124	MD11
A340-600	SBR1
B721;B722	
B731;B732	T134
B747	YK42
DC-8	
Dc-10	
H25A	
IL-62	

RWY 36L:
- Usable for take- off at night time.

RWY 36R:
- Usable for take-off at day only.

In South configuration:

RWY 15R/L:
- Used for take-off in the day time, following the initial segments of all published SIDs.
- For night time RWY 15L will be used following the initial segments of all published SIDs.

RWY 18R/L:
- Usable for landing at day and night time.

RWY 18L:
- Usable for landing at night time.

In any configuration:
Tests or training flights are forbidden.

7.. Aircrafts operations are forbidden to aircraft with ICAO Chapter II Annex 16, Vol I

8. Departure and arrival paths will be radar monitored and noise level will be measured for each operation. Noise sensors location (SIRMA system) were provided by airport. This measurement system works 24 hours a day in automatic form and beeps radar data, flight path and aircraft position at every moment for the aircraft identification.

9. Change on the procedures must not be asked for until reaching FL100 except propeller aircraft.

10. Use of Auxlliary Power Unit (APU) see APU restrictions below.

Noise Abatement Procedures
Takeoff:
1. Up to 1500 ft above airport elevation:

- take-off power
- take-off FLAP
- climb maintaining V2 +10 to 40km/h (V2 + 10 to 20 kt) or limited by body angle.

2. At 1500ft

- reduce power not less than ascent power

3. From 1500 ft to 3000 ft

- climb maintaining V2 +10 to 40km/h (V2 + 10 to 20 kt)

4. At 3000 ft

- accelerate gradually to reach climbing crusing speed with flaps retraction at the proper time

Note: Aircraft may be exempted when using different procedures, fully reported to Airport Management in advance, which are proved to lead to a less acoustic impact, or due to properly justified safety reasons.

Landing:

1. The use of reverse power above from idle regime is forbidden at night time except for safety reasons, in this case, it must be notified to TWR and to Division de Medio Ambiente of the airport.

2. Landing and approach procedures on visual meteorological conditions will be performed with an angle equal to or higher than the ILS GP or PAPI of each runway.

3.- In the approaches to RWY18R the following landing procedure with reduced flaps configuration is recommended. Its use is subject to the decision of the pilot and safety must prevail at all times:

1. Intercept the ILS with a minimum flaps configuration and landing gear retracted.

Do not extend the landing gear and keep the minimum possible flaps configuration up to 5.0 DME ILS

CONTINUOUS DESCENT ARRIVAL (CDA)
Since 26-08-2010 exist CDA procedures in north configuration with the following hours of operation:

1. V: 22:00-05:00

- I: 23:00- 06:00

AIRPORT CURFEWS

NIGHT OPERATING RESTRICTIONS IN BARAJAS – MADRID AIRPORT

1. Departure and arrival operations classified as CR-4 or above are forbidden.

2. From November 2nd, 2006 partial restrictions due to noise quota are established from 23:00 to 07:00 local time

Noise Quota Aircraft Classification
Noise quota (CR) is defined for each aircraft, making difference between departure and arrival operations, in accordance with the EPNdB certificated (Effective Preceived Noise Measured in Decibels) related to the following table.

EPNdB	Noise Quota (CR)
Greater than 101.9	CR-16
99-101.9	CR-8
96-98.9	CR-4
93-95.9	CR-2
90-92.9	CR-1
Less than 90	CR-0.5

Those propeller aircraft certified with regard to the Chapters 6 and 10 of ICAO Annex 16, and propeller or jet aircraft certified according to the Chapters 3 and 5 which noise data be less than 87 EPNdB will be considered as
Noise Quota Cero (CR-0).

The EPNdB is defined in accordance with the following criteria:

1. In departure operations for aircraft certified according to the Chapters 3, 4 and 5 or ICAO Annex 16, the average between the departure and the sideline certificated noise levels at its maximum certificated take-off weight.

2. In arrival operations for aircraft certified according to the Chapter 3, 4 and 5 of ICAO Annex 16, the certificated approach noise level measured in EPNdB at its maximum certificated landing weight minus 9 EPNdB.

Exceptions

1. Exceptions

Exceptionally, the airport directorate may authorize landing or take-off operations of aircraft with a noise quota (CR) equal or higher than CR4 when:

A) The operation takes place within 30 minutes after or before the time limits expected, as long as this is due to a delay caused by the programmed operation.

B) The operation is justified on safety reasons. as well as to assist transportation of urgent humanitarian aid and others required in consequence of operational alterations derived from meteorological conditions, industrial actions and other exceptional occurrences.

RESTRICTIONS TO OPERATIONS

- The airport is closed to aircraft without radio communication and helicopters

- The airport is closed to General Aviation and Business aircraft (except cargo aircraft) with a maximum take-off weight (MTOW) lower than 50,000 kg and a capacity less than 70 passengers in the following hours:

V: 0500-2100
I: 0600-2200

7. After 1/1/2000 operations are forbidden to aircraft with ICAO Chapter II Annex 16 Vol. I certification during the time comprised between 2300 and 0700 hours local time.

PREFERENTIAL RUNWAYS

North configuration:
In normal operation conditions, when the tail wind component is not higher than 10 kt (the runway surface is dry or it is wet with good braking action):

- During day time (0700-2300 LT), runways 36L36R will be used for take-off and runways 33L/33R for landing.
- During night time (2300-0700 LT) runway 36L will be used for tale-off and runway 33R for landing. Runways 15L/15R will not be authorized for take-off.

South configuration:
In normal operation conditions (the runway surface is dry or it is wet, with good breaking action):

- During day time (0700-2300 LT), runways 15L/15R will be used for take-off and runways 18L/18R for landing.
- During night time (2300-0700 LT) runway 15L will be used for take-off and runway 18L for landing. Runways 33L/33R will not be authorized for take-off.

OPERATING QUOTA - NONE

ENGINE RUN-UP RESTRICTIONS

Engine performance testing higher than idle regime may be accomplished during H24 at the engine testing area established for such purpose.

Procedures of preferential taxiing to ground engine testing area:

- Entry in both configurations: Via MZ.
- Exit in both configurations: Via AZ.

Requests for engine testing clearance at any type of regime, as well as any question regarding engine testing procedures, must be addressed to:

Centro de Gestión Aeroportuaria (CGA)
TEL: +34 913-936-552
FAX: +34 913-936-201

APU OPERATING RESTRICTIONS

Stand	Day Period (0700-2300) LT	Night Period (2300-0700) LT
	- It is obligatory the use of the 400 Hz facilities.	- It is obligatory the use of the 400 Hz facilities.

T1 to T35	- The use of the air conditioning facilities (A/C) will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrivals and 5 minutes before off blocks for departures. - The aircraft APU will only be used when the fixed units are not operative and the mobile units are not available.	- The use of the air conditioning facilities (A/C) will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrivals and 5 minutes before off blocks for departures. - The aircraft APU will only be used when the fixed units are not operative and the mobile units are not available.
1 to 49 T36-T41	- No restrictions	- The use of APU is forbidden except 10 minutes after blocks for the arrivals and 10 minutes before off blocks for departures, except wide body aircraft. These aircraft are permitted to use it 50 minutes before departure and 15 minutes after arrival.
50 to 69	- No restrictions	- Not allowed operation
70 to 74	- It is obligatory the use of the 400 Hz facilities. - The use of the air conditioning facilities (A/C) will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrivals and 5 minutes before off blocks for departures. - The aircraft APU will only be used when the fixed units are not operative and the mobile units are not available.	- Not allowed operation
80 to 162	- No restrictions	- Not allowed operation
163-175	- No restrictions	- The use of the aircraft APU is forbidden in these stands in the period between 10 minutes after blocks for the arrivals and 10 minutes before off-blocks for departures, except wide-body aircraft that will be authorized to use APU until 15 minutes after blocks for the arrival and from 50 minutes before off-block for departures.
200-227	- No restrictions	- No restrictions
300-312 330-394	- It is obligatory the use of the 400Hz facilities. - The use of the air-conditioning facilities will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrival and 5 minutes before off-blocks for departures. - The aircraft APU will only be able to be used when the fixed units are not operative and the mobile units are not available.	- It is obligatory the use of the 400Hz facilities. - The use of the air-conditioning facilities will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrival and 5 minutes before off-blocks for departures. - The aircraft APU will only be able to be used when the fixed units are not operative and the mobile units are not available.

320-329 400-448	- No restrictions	- No restrictions
500-586	- It is obligatory the use of the 400Hz facilities. - The use of the air-conditioning facilities will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrival and 5 minutes before off-blocks for departures. - The aircraft APU will only be able to be used when the fixed units are not operative and the mobile units are not available.	- It is obligatory the use of the 400Hz facilities. - The use of the air-conditioning facilities will be obligatory when the aircraft air conditioning is needed. - The use of the aircraft APU is forbidden in these stands in the period between 2 minutes after blocks for the arrival and 5 minutes before off-blocks for departures. - The aircraft APU will only be able to be used when the fixed units are not operative and the mobile units are not available.
600-686	- No restrictions	- No restrictions

NOISE BUDGET RESTRICTIONS - NONE

NOISE SURCHARGE

Surcharges according to the noise level of the aircraft at Alicante, Barcelona, Gran Canaria, Madrid/Barajas, Málaga, Palma de Mallorca, Tenerife Sur and Valencia airports, for civil subsonic jet aeroplanes, the resulting quantities of the landing charges and will be increased in the following percentages on the basis of the time period in which the
landing or take off takes place and the acoustic classification
of each aircraft

1/2011 IATA Airport ATC and Fuel Charges Monitor
Landing Fee - Based on maximum take-off weight

Landing Charge 1/1/2011	
All International and EC	EUR 7.55 per tonne
Minimum	EUR 151.00

The acoustic category of an airplane is determined as per the following:

Category 1	cumulative margin relative to Chapter 3 of **less than 5 EPNdB**	
Category 2	cumulative margin relative to Chapter 3 of **between 5-10 EPNdB**	
Category 3	cumulative margin relative to Chapter 3 of **between 10-15 EPNdB**	
Category 4	cumulative margin relative to Chapter 3 of **over 15 EPNdB**	
Acoustic Category	**from 0700 to 2259**	**from 2300 to 0659**
Category 1	70%	140%
Category 2	20%	40%
Category 3	0%	0%
Category 4	0%	0%

NOISE MITIGATION/LAND USE PLANNING PROGRAM INFORMATION

Type of Program	Date Implemented	Status
	The sound isolation	

Sound Insulation (Residences and Public Buildings)	program was approved by the Ministry of Environment on November 14, 1998.	So far, Aena has completed the acoustic insulation of 12.554 dwellings and public buildings within the Madrid-Barajas airport noise contours.
Purchase Assurance for Homeowners Located Within the Airport Noise Contours	The Sound Isolation Program Commission approved these actions on: June 4, 2003	Purchase of 42 houses placed in a high acoustic pressure area inside the airport noise contours (“El Paleto”, Coslada).
	December 21, 2004	Building of 70 new houses to transfer inhabitants living in high acoustic pressure area inside the airport noise contours (“Las Castellanas”, San Fernando de Henares).
Avigation Easements	-	-
Zoning Laws	November 17, 2003	Law 37/2003 on Noise.
	December 16, 2005	Royal Decree 1513/2005, which develops Law 37/2003 on those aspects related to the assessment and management of environmental noise.
	October 19, 2007	Royal Decree 1367/2007 which develops Law 37/2003 on those aspects related to acoustic zoning, quality objectives and acoustic emissions.
Real Estate/Property Disclosure Laws	Procedure of Directorate General of Civil Aviation (Ministry of Development)	It is not allow to construct new houses, educational or sanitary buildings within the daytime (7:00-23:00 hours) Leq 60 dB(A) or night time (23:00-7:00 hours) Leq 50 dB(A) airport noise contours
Acquire Land for Noise Compatibility to date	-	-
Population within each noise contour level relative to aircraft operations	From November 1998 up to date.	48.000 persons affected within the Leqday (7-23 h) 65 dB(A) and/or Leqnight (23-7 h) 55 dB(A) airport noise contours.
	The noise contours consequence of the Environmental Impact Declarations of Madrid-Barajas were	

Airport Noise Contour Overlay Maps	approved: Expansion Project of 1996 June 28, 1999 Expansion Project of 2001 November 14, 1998	Leqday (7-23 h) 65 dB(A) and Leqnight (23-7 h) 55 dB(A)
Total Cost of Noise Mitigation Programs to Date	From November 1998 up to date.	The investment in acoustic isolation made by Aena reaches over 150 Million €
Source of Noise Mitigation Program Funding for Aircraft Noise	-	Acoustic isolation measures are totally paid by Aena as promoter of its own airport infrastructure.

NOISE MONITORING SYSTEM
Map of Monitor Locations

Location	Latitude	Longitude
1 La Moraleja	403103N	0033702W
2 Algete	403557N	0033046W
3 San Sebastian De Los Reyes	403358N	0033640W
4 Fuente El Fresno	403504N	0033520W
5 Ciudad Sto. Domingo(S)	403716N	0033441W
6 Fuente El Saz	403742N	0033102W
7 Paracuellos Del Jarama	403025N	0033204W
8 Mejorada Del Campo	402348N	0033858W
9 Belvis	403347N	0033305W
10 San Fernando De Henares	402553N	0033125W
11 Coslada (Estacion)	402624N	0033152W
12 Barajas (Alam. Osuna)	402735N	0033451W
13 Barajas (Pueblo)	402836N	0033442W
14 THR. 33L	402757N	0033318W
15 THR. 33R	402834N	0033214W
16 Tres Cantos	403701N	0034207W
17 THR. 18R	404417N	0033424W
18 El Molar	404415N	0033446W
19 Plataforma Dique Sur	402731N	0033437W
20 Torre Jon De Ardoz	402645N	0032917W
21 Ciudad Sto. Domingo(N)	403830N	0033423W

22 THR. RWY 18L	403131N	0033329W
23 Los Berrocales	402818N	0033053W
24 Ciudal Campo	403640N	0033702W
25 Prado Norte	403623N	0033251W
26 Club de Campo	403614N	0033506W
27 La Granjilla	403430N	0033610W

Departure and arrival paths will be radar monitored and noise level will be measured for each operation. Noise sensors location (SIRMA system) were provided by airport. This measurement system works 24 hours a day in automatic form and beeps radar data, flight plant and aircraft position at every moment for the aircraft identification. There are 24 noise measurement terminals (NMT).

Noise Impact control: priority objective
In line with a sensitive environment policy, Aena has established a sophisticated noise-monitoring system at Madrid/Barajas which will reduce noise impact on communities near the airport over time by allowing adoption of selected remedial measures. Similar noise monitoring systems are to be set up at Barcelona and Palma de Mallorcs.

In Madrid the system receives noise data from 29 remote stations located at critical points around the airport which can measure the actual noise levels of each movement in real time (some have extra functions for collecting air and water pollution data). The data collected is integrated with information from Air Traffic Control Automatic System (SACTA) which provides flight plan and flight- path information so each sound event ban be linked to the precise aircraft. The information is analyzed centrally allowing efficient management of such factors as flight track abuse monitoring.

FLIGHT TRACK MONITORING SYSTEM
Yes - see information under Noise Monitoring System

NOISE LEVEL LIMITS - NONE

CHAPTER 2 RESTRICTIONS
Chapter 2 airplanes >75,000 lbs are banned from operating at airports in EU Member States as of April 1, 2002.

CHAPTER 2 PHASEOUT
From April 1, 2002 all civil subsonic jet aeroplanes >75,000 lbs operating at airports in EU Member States must comply with the standards specified in Part II, Chapter 3, Volume 1 of Annex 16 in accordance with EU Council Directive 92/14/EEC.

CHAPTER 3 RESTRICTIONS
Chapter 3 Non Addition
Since March 28th 2007, not any air company will be able to increase the number of flights made at an airport by marginal compliant aeroplanes (civil subsonic jet aeroplanes in compliance with the limit certification values from the Volume 1, Second part, Chapter 3 of Annex 16 of Convention of International Civil Aviation by an accumulated margin not higher than 5EPNdB), for each one of the IATA air traffic, seasons or a part of it, regarding the number of flights operated by those aeroplanes along the corresponding IATA air traffic seasons or a part of it in the year 2006.

Chapter 3 Reduction of Operations and Fleet Withdrawl

Since September 28th 2007, airlines must reduce the number of marginal compliant aeroplanes operations exploited at an airport with a ratio not hig-her than 20 per cent in a year but, in any case, it must have reached 100 per cent of the operations made by those aircrafts on September 28th 2012. For the annual measurement computation of operations, the minimum reduction percentage will not be lower than 15 % regarding the corresponding IATA air traffic season of the immediate previous year.

Note:
General Civil Aviation Directorate approved, via its Resolution of August 30, 2006, the application of operational restrictions on “marginally compliant”(1) airplanes, establishing the progressive withdrawal of these airplanes by airlines operating at the Airport, at an annual rate of 20%, until reaching 100% of the operations carried out by these airplanes before September 28, 2012. This decision introduces operational restrictions at Madrid-Barajas Airport following the “Balanced Approach” procedure explained in Royal Decree 1,257/2003, of October 3. This concept is an action tool including the simultaneous and coordinated execution of four main elements, which are: the reduction of sound levels by the emission source, the development of actions focussed on territory organisation and management in the airport environment avoiding urban development in areas exposed to levels above environmental quality criteria, the implementation of operational procedures for noise reduction and the introduction of operational restrictions for the noisiest airplanes.