

Arrival/Departure

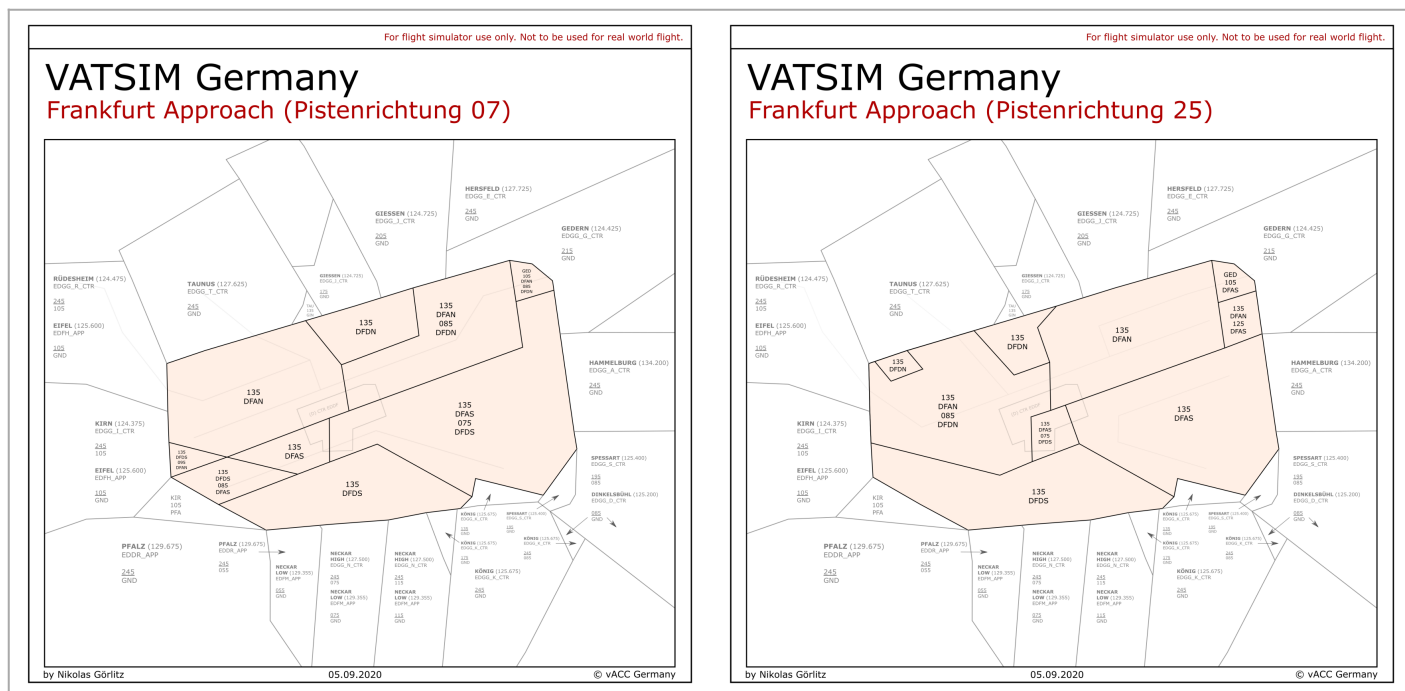
Arrival can be split in 6 stations as shown in the table below.

Sector	Station ID	Login	Frequency	Remark
Pickup				
Arrival North	DFAN	EDDF_N_APP	120.805	primary
Arrival South	DFAS	EDDF_S_APP	125.355	--
Feeder				
Director North	DFFN	EDDF_H_APP	127.280	secondary
Director South	DFFS	EDDF_L_APP	118.505	--
Departure				
Departure North	DFDN	EDDF_N_DEP	120.155	--
Departure South	DFDS	EDDF_S_DEP	136.130	--

All APP/DEP frequencies shall always be cross-coupled by the responsible controller.

Terminal Maneuvering Area (TMA)

Below you can find the arrival sector of Frankfurt with its subsectors. In case there is only one controller online, the whole sector is controlled by them. All subsectors combined constitute the Terminal Maneuvering Area (TMA). The MVA chart is available via chartforx.org or as Topsky Map at Euroscope. The airspace structure can be found at openflightmaps.org.



Departure: If only one Departure controller is online, he takes over the other Departure sector. If no Departure controller is online, Arrival North takes over Departure North and Arrival South takes over Departure South. If only one Arrival controller is online, he takes over the other Arrival sector.

Director (Feeder): Feeders do not have their own sectors. They are assistants of the Arrival controllers which is why Director North has the same sector as Arrival North and Director South has the same sector as Arrival South. If only one Director is online, he is the Director for both Arrival controllers.

Arrival Procedures

General Procedures

Arrival Routes: As the clearance limits for all EDDF STARs are outside of the TMA, the appropriate Center controller issues the clearance for any STAR and initiates the handoff before sector entry. In normal operations, the RNAV STARs from SPESA, KERAX, (RASVO), IMCOM, ROLIS, (PETIX), EMPAX, [DIXAT](#), and DEBHI are used. In this case, Center clears most aircraft from the north via the northern STAR and every aircraft from the south via the southern STAR. All aircraft unable for the northern runways, the restricted heavies (A380s, B747s, MD11s (and AN124/AN225)), as well as aircraft parking at the GAT, shall be cleared for the southern STAR in order to ensure that they will arrive in the southern downwind. The designators for the RNAV STARs are shown below. All other aircraft landing on the southern RWY should be cleared for the southern arrival as well.

Runway	STAR	Routing	Old Transition
25	A	North	25N-Transition

Runway	STAR	Routing	Old Transition
B	South	25S-Transition	
07	C	South	07S-Transition
	D	North	07N-Transition

Alternative RNAV STARs: These STARs via UNOKO, ROLIS, KERAX and SPESA are only used between 22 and 05 lcl for the RNP X approach.

Runway	STAR	Routing	IAF
25	G	North	ORVIV
		South	KUGUK
07	R	North	IBLUS
		South	ULNOK

Even after the clearance for the STAR, the Arrival controller can always use vectors for sequencing.

Releases: Traffic handed over from Center to Frankfurt Arrival is fully released for turns and further descent. Arrival needs to ensure sufficient spacing between traffic.

Inbounds should always stay clear of the departure sector even if Arrival handles departures as well.

Approaches

The following approaches are available at Frankfurt.

Approach	Runways	Remarks
ILS	07R/25L	3° glide path <i>RNAV required</i>
ILS X	07C/25C	3° glide path <i>non-RNAV</i>
ILS Y	07L/25R	3.2° glide path <i>RNAV required</i>

ILS Z	07L/25R 07C/25C	3° glide path <i>RNAV required</i>
GLS Y	all	3.2° glide path <i>shall only be used upon pilot request</i>
GLS Z	all	3° glide path <i>shall only be used upon pilot request</i>
RNP X	07L/25R 07C/25C	noise abatement procedure (former RNP Y)
RNP Y	all	3.2° glide path
RNP Z	all	3° glide path

Usage of the different Approaches: By default, ILS approaches are always used. Visual approaches should only be used if a pilot is unable to fly the ILS or RNP Z for any reason. In this case, the visual approach does not change any dependencies according to Operation Modes. All other approaches shall only be used on the pilot's request and after coordination with all relevant stations (esp. Director and Tower). In high-traffic situations only ILS approaches are recommended.

Depending on the traffic load, the **RNP X** approach for runway 25C/L or 07C/R is used between 22 and 05 local time. Coordination with Tower required.

Intercepting below 4000ft should be avoided due to noise abatement. If a pilot missed the intercept and overshoot he could be turned back onto the ILS and descended below 4000ft in compliance with the MVA.

Runway Assignment: Usually inbounds from the north will get the northern runway while inbound from the south will get the southern runway. Arrival/Feeder can deviate from that if required or requested by the pilot. Traffic for the GAT and Cargo aircraft except GEC, FDX, BCS, and BOX will always get the southern runway.

Non-RNAV: All aircraft without RNAV capabilities need to fly the **ILS X** for runway **07C/25C** due to the missed approach procedure.

Runway 25R/07L (Nord-West-Landebahn)

Runway 25R/07L is not allowed for the following aircraft types: B747, A380, MD11, DC10, AN124, L-1011

ILS Y/Z: For runway 25R/07L an ILS-Z and ILS-Y exist. The ILS-Z approach has a 3°-glide slope and the ILS-Y has a 3,2° glide slope. The ILS-Y approach is the default one used. If there is a tailwind or LVO (CAT 2/3 operations) ILS-Z needs to be used.

The ILS approach in use has to be mentioned in the ATIS! Coordination between Tower and Arrival may be necessary.

Keep in mind, always the full approach name must be used (e.g. "expect ILS ZULU runway 25R").

Target Spacings

As Tower must respect dependencies between departing and arriving aircraft, there are target spacings that should be present at touchdown for the highest efficiency of the runway system. Depending on the amount of departures, it is important that these minima are met whenever possible. Coordination is required if these can temporarily not be met or if Tower needs more spacing.

Targetspacing for inbounds only need to be applied by Arrival when **requested by Tower!** Otherwise radar or WTC separation is used by default.

These target spacings at handoff are as follows:

- **07R arrivals:** 5 NM (minimum 4 NM at touchdown)
- **07L arrivals:** Radar Separation
- **25L arrivals:** 6 NM (minimum 5 NM at touchdown)
- **25R arrivals:** 5 NM

Wake Turbulence Separation must be applied where necessary all the time.

Separation on final

As per the AIP for EDDF, separation between two aircraft approaching the same runway can be reduced to 2.5 NM under some conditions:

4. Reduced minimum radar separation between approaches to runways 07L, 07C, 07R, 25R, 25C and 25L

4.1 During approaches to runways 07L, 07C, 07R, 25R, 25C and 25L, the radar separation minimum of 2.5 NM applies on final approach between 10 NM and touchdown, provided the following conditions are met:

- a. The preceding aircraft has the same or a lower weight category.
Aircraft of the weight category SUPER, HEAVY and the B757 as preceding aircraft, are excluded from this procedure.
- b. The exit taxiways of the runway can be observed from the control tower visually or by means of surface movement radar.
- c. The runway is dry.

4.2 The reduced radar separation minima may also be applied between staggered approaches to the parallel runways. In these cases, neither the line of sight of the exit taxiways (4.1 b) nor the runway conditions (4.1 c) need to be considered as a precondition.

Additionally, the separation between dependent parallel approaches to the parallel runway systems 25L/25R and 07L/07R can be reduced to 1.5 NM.

REQUIREMENTS AND PROCEDURES FOR DEPENDENT PARALLEL APPROACHES

Dependent parallel approaches should only be conducted to parallel runways when the following conditions are met:

- a. separate air traffic controllers are responsible for the sequencing and spacing of arriving aircraft to each runway;
(Note: As an exception for DFS, this procedure may also be used with only one Director)
- b. the runway centre lines are spaced by 915 m (3 000 ft) or more;
- c. the final approach course or track is intercepted by use of:
 1. vectoring; or
 2. a published arrival and approach procedures that intercepts with the IAF or the IF.
- d. [...]
- e. the instrument flight procedure that aligns the aircraft with the extended runway centre line is one of the following:
 1. a precision approach procedure;
 2. [...]
 3. [...]
 - an appropriate, documented safety assessment has shown that an acceptable level of safety can be met; and
 - operations are approved by the competent authority;
- f. aircraft are advised that approaches are in use to both runways;
- g. the nominal tracks of the missed approach procedures diverge by at least 30 degrees;
- h. [...]
- i. a minimum of nominal 300 m (1 000 ft) vertical separation or a minimum of 5.6 km (3.0 NM) horizontal separation is provided between aircraft until established on the final approach courses or tracks of parallel approaches;
- j. the minimum horizontal separation to be provided between aircraft established on the same final approach course or track is 5.6 km (3.0 NM), or 4.6 km (2.5 NM) horizontal separation if so determined in accordance with ATS.TR.215, unless increased longitudinal separation is required due to wake turbulence;

k. the minimum horizontal separation to be provided diagonally between successive aircraft on adjacent final approach courses or tracks is:

1. [...]
- 2.

- (2) 2.8 km (1.5 NM) between successive aircraft on adjacent final approach courses or tracks more than 1 097 m (3 600 ft) but not more than 2 529 m (8 300 ft) apart (see Figure 54); or

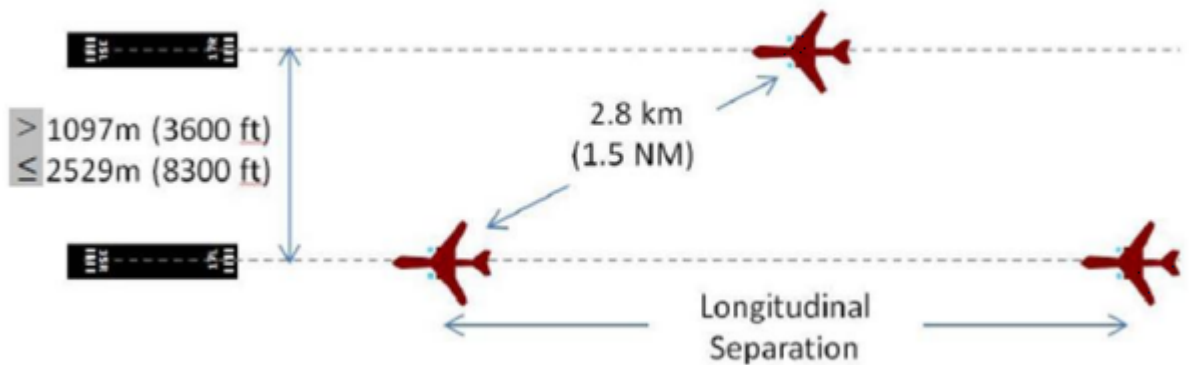


Figure 54: Diagonal separation for distance between centre lines greater than 1 097 m (3 600 ft) but less than or equal to 2 529 m (8 300 ft)

Source: Regulation (EU) 2017/373, ANNEX IV — Part-ATS, 10.02.2023

Low Visibility Operations (LVO)

The current RVR values need to be given with the approach clearance. During low visibility operations, target spacings to all runways shall be as follows:

- **Preceding WTC M:** minimum 5 NM or target spacing, whichever is greater
- **Preceding WTC H/J:** minimum 7 NM

Missed Approaches

If no other procedure is coordinated, all missed approaches for ILS, RNP, and GLS approaches will be as published. It is strongly recommended to stick to the missed approach as published. In case of a swing over to runway 25C, this missed approach will climb on runway track to 5000ft. All other missed approaches for visual approaches to any other runway need to be coordinated in advance.

During 25 operations, missed approaches via the south of the airport on headings need to cross the departure routes out of runway 18 at least at 5000ft due to the initial climb of 4000ft.

Missed approaches could be on headings by arrival as soon as they are above the MVA. Headings like 160 or 340 are not recommended for vectoring back onto the downwind.

Holdings

The following holdings can be used by Frankfurt Arrival, but are not recommended except due to emergencies or runway closure on short notice: MTR, CHA, FKS, TAU, GED

For traffic management purposes the Center controller shall use the following holdings instead: UNOKO (via RASVO), EMGOD (via IMCOM), ROLIS, KERAX, SPESA (above FL130). SPESA holding at and below FL130 lays in the TMA. It can be coordinated to delegate aircraft below FL135 in the SPESA holding to the appropriate Center controller.

When holdings are used, close coordination between the Center and Arrival controller is mandatory. When an aircraft shall leave the holding towards approach, the Center controller shall instruct the pilot to leave the holding via the appropriate STAR and to contact the Arrival controller.

It is very important not to drain out the final. Even if the Approach sector is too busy and traffic management holdings are necessary, usually there is no need to completely close sector entry for more than 5 minutes (around one orbit in the hold). After a short closure because of an overload on the Arrival/Director stations, it is recommended to set an aircraft rate per time, e.g. not more than one aircraft per 4 minutes via RASVO/IMCOM/ROLIS/KERAX and not more than one aircraft per 3 minutes via SPESA. Try to clear the holdings as quickly as possible. Due to the enormous capacity in parallel operations (up to 60 movements per hour), usually extensive holding usage is not necessary.

Besides the traditional holdings radar vectors along the downwind and final (without an approach clearance) can be used to delay inbounds as well. In this way, there is a lot of capacity to hold aircraft and it is easy to dissolve. It is recommended to use this procedure when the airport is completely closed for a short time. Do not have too many aircraft in this holding structure to make separation easy – the Center holdings can be used for any additional aircraft.

Departure Procedures

Inbounds should stay above outbounds, clear of the Departure sector (at or above FL90). Outbound should stay at FL80 or below until they are clear of inbound traffic. If Departure and Arrival are staffed, a direct climb to FL110/FL130 can be coordinated if there is no conflict.

If the Arrival controller takes over the respective Departure sector, it is possible to let a departure climb above an arriving aircraft if the climb rate permits. Therefore make sure that at first inbound and outbound are vertically separated. Only when it is predictable that the outbound can overclimb the inbound, further climb should be issued.

Departing aircraft shall be handed over to the appropriate Center controller on the following flight levels to the following station:

Level	SID / Waypoint
FL110	CINDY / SULUS (out of RWY 18)
FL130	ANEKI / SOBRA / ULKIG / OBOKA / MARUN / TOBAK / SULUS (out of 07)

All departing aircraft shall be handed over to the appropriate Center controller as early as possible, clear of any other traffic. **Traffic handed over from Departure to Center is fully released for further climb and turns.** Especially departing aircraft with the same routing, even for just some time, shall be separated by at least 10 NM laterally whenever possible. Otherwise, additional vertical separation shall be applied (e.g. for merging F and M/H routes if not solved by vectors, directs, or speeds).

Modes of Operation

The runways system can be used in three different ways. This chapter explains these different modes of operation. In all systems, the main landing runways are 07R/25L and 07L/25R. Runway 07C/25C can be used as well (especially via visual swing-overs; see TWR SOP). In parallel operations, runway 07C/25C shall not be used by the Approach controllers and it shall not be used by the Tower controller for visual swing-overs two times right behind each other (swing-overs during 07 operations are only allowed for safety reasons anyways – see TWR SOP). If these rules are followed, visual swing-overs do not affect the following dependencies or independencies in any way.

Dependent operations are much easier to use but it does not have as much traffic capacity as parallel operations do. Usually, dependent operations are used on VATSIM. Especially during bigger events parallel operations may be the best way of handling the traffic.

Parallel Independent Operations

Arriving aircraft on runway 07L/25R are independent of arriving aircraft on runway 07R/25L as soon as they are established on the localizer.

1. The first Arrival controller to be contacted (not Director!) by the pilot assigns the runway. After the runway assignment, the handoff from one Arrival controller to another Arrival controller is necessary if the aircraft leaves one Arrival sector and enters another Arrival sector.
2. The pilot is handed over from the appropriate Arrival controller to the appropriate Director controller (Director North for all runway 07L/25R arrivals, Director South for all runway 07R/25L arrivals) no later than 10 NM before the expected turn onto the final (earlier handoff preferred).
3. Before hand-over from the Arrival to the Director controller, the aircraft must be instructed to descend to the intercept altitude (5000ft for 07L/25R, 4000ft for 07R/25L)

whenever possible (this is strongly preferred!). If this is not possible, FL60/6000ft or higher could be used. Often it makes sense to instruct all pilots to maintain 220 KIAS before the handover to the Director controller.

4. The localizer or ILS clearance cannot be issued before the aircraft has reached the ILS intercept altitude.
5. Aircraft have to be at intercept altitudes inside the turn areas (see image). Any aircraft in the turn area not at intercept altitude has to be coordinated with both directors. If an aircraft is flying straight in and can not reach intercept altitude before entering the turn area, it has to be turned towards the downwind.
6. Outbound capacities can be reduced due to parallel operations. Target spacings (see above) should still be met wherever practicable.

With two Feeders it might be helpful to have all arrivals for runway 25L/07R (e.g. the ones not allowed on 25R/07L) on the southern downwind by clearing also arrivals from the north for the southern STAR. Inbounds from the north downwind for the southern runway will be handed over to FFS.

Procedures for parallel independent

- During this mode of operation, aircraft have to be able to fly 1 NM straight and level before intercepting the LOC and 2 NM straight and level before intercepting the GS (See ICAO DOC 4444).
- The Non-Transgression-Zone (NTZ) provided with the local Euroscope files defines a zone that must not be violated by approaching traffic. According to the ICAO definition, upon violation of the NTZ by one of the approaching aircraft, the aircraft in the adjacent approach must be instructed to perform a Go Around. It is not sufficient to instruct a Go Around for the aircraft violating the NTZ.
- The intercept of aircraft has to be performed so, that the aircraft establishes on the LOC inside the turn area.
- The line left of the turn area indicates the latest point at which an aircraft has to be established on the LOC, not below the published ILS intercept altitude, due to noise abatement reasons. Intercepts closer to the airport should be the exception if for example pilots overshoot the LOC and have to be turned back toward the ILS.



Turn areas for

25 configuration (green)

Staffing

Possible staffing configurations (no others are possible!):

1. **DFDN, DFAN, DFFN** (recommended if no more controllers are available but there is too much traffic for staggered operations. Otherwise use staffing option 2 or use staggered operations.)
2. **DFAN, DFAS, DFFN, DFFS** (DFDN, DFDS) (recommended!)
3. **DFAN, DFAS, DFFN** (DFDN, DFDS) (not recommended!)
4. **DFAN, DFFN, DFFS** (DFDN, DFDS) (usually not recommended!)
5. **DFAN, DFFN** (only in exceptional cases where there aren't more controllers but the traffic amount does not allow staggered operations. This should be changed back to staggered operations as soon as practical.)

Station in brackets: additionally one or more of these stations can be staffed.

If just one Director is staffed, he takes over the other Director.

DFAS and DFAN, DFFN and DFFS as well as DFDN and DFDS can be interchanged if one of the frequencies is preferred due to the neighbor station.

In real life parallel operations can only be used with two Director controllers. On VATSIM parallel operations with only one director is possible if necessary, but not recommended. With two directors, only parallel operations are possible.

Dependent Operations

Arriving aircraft on runway 07L/25R are dependent to arriving traffic on runway 07R/25L. However, the separation for aircraft established on the parallel runways can be reduced to 1.5 NM. Wake turbulence separation has to be given at any time for aircraft approaching the same runway. It is also important that all aircraft have to fly a precision approach. If an aircraft is unable for a precision approach, it is required to switch to alternating operations for this aircraft.

Procedures

Director assigns the runway on the initial contact or very soon thereafter.

The handoff from Arrival to Director should take place no later than 10 NM before the expected turn onto the final (earlier handoff is preferred when able).

Staffing

Possible staffing configurations (no others are possible!):

1. **FAN** (FFN, FDN, FDS)
2. **FAN, FAS, FFN** (FDN, FDS) (not recommended!)

Station in brackets: additionally one or more of these stations can be staffed. FAS and FAN, FFN and FFS as well as FDN and FDS can be interchanged.

Alternating Operations

All arriving aircraft must maintain radar separation. Reduced Minimum Radar Separation (RRS) can be applied if necessary.

Procedures

Director assigns the runway on the initial contact or very soon thereafter.

The handoff from Arrival to Director should take place no later than 10 NM before the expected turn onto the final (earlier handoff is preferred when able).

Staffing

Possible staffing configurations (no others are possible!):

1. **FAN** (FFN, FDN, FDS)
2. **FAN, FAS, FFN** (FDN, FDS) (not recommended!)

Station in brackets: additionally one or more of these stations can be staffed. FAS and FAN, FFN and FFS as well as FDN and FDS can be interchanged.

Minor Airports within the TMA

Egelsbach

Egelsbach (EDFE) is an uncontrolled airfield within the Frankfurt TMA. Egelsbach is handled the same way as any other uncontrolled airfield. If Egelsbach Radio is offline, it can be handled by DFAS if this controller has the VATSIM AFIS endorsement. Egelsbach airport can be delegated to Frankfurt Tower if this controller has the AFIS endorsement. If no controllers have the AFIS endorsement, Egelsbach airport cannot be covered with AFIS service.

Although Egelsbach is an uncontrolled airfield, a big ratio of the traffic is business traffic. This traffic is usually IFR but must depart or land VFR in Egelsbach. Standard procedures for IFR pickup or IFR cancellation apply. It is recommended to execute IFR cancellations southeast of EDDF at 4000ft or below. It is also recommended to instruct pilots inbound Egelsbach to leave airspace CHARLIE to below as soon as IFR is canceled.

Charts are available in the [AIP VFR](#).

Wiesbaden

IFR in-/outbounds to Wiesbaden (ETOU) need to be separated to Frankfurt in-/outbounds. Coordination between Arrival and Frankfurt Tower might be necessary.

An ILS approach is only available for runway 25 while both runways have RNP and TACAN approaches.

Wiesbaden's extended Northern pattern enters airspace D above the Wiesbaden CTR up to 2100ft. If use of the extended pattern is required, Wiesbaden Tower will request approval from DFAN.

IFR departures out of Wiesbaden are initially cleared to the final waypoint of the SID by Wiesbaden Ground. Further clearance to the destination is required once the aircraft is handed off to Langen Radar.

“ **DUKE31**: Langen Radar, Duke 31, 2300ft, climbing 5000ft.
Langen Radar: Duke 31, Langen Radar, identified, climb to FL130, cleared to Stuttgart via flight planned route.
DUKE31: Duke 31, climbing FL130, cleared to Stuttgart via flight planned route.

Charts are available via [MILAIS GEMIL FLIP US DoD](#).

Wiesbaden arrivals sometimes need to be descended earlier than Frankfurt arrivals to ensure a manageable descent profile. The following table shows some **tips on how to achieve this**.

Runway	Direction	Routing and descent profile
07 (RNP)	from the Northwest	direct to OU452 to cross OU452 at 5000ft, from OU452 cleared for the approach
	from the Northeast	direct to OU455 to cross OU455 between 5000ft and 7000ft, from OU455 cleared for the approach
	from the South	
25 (ILS)	from the Northwest	direct to TAU to cross TAU between 5000ft and 8000ft, from TAU cleared for the approach
	from the Northeast	direct to OU117 to cross OU117 between 4000ft and 7000ft, from OU117 cleared for the approach
	from the South	direct OU115 to cross OU115 at 4000ft, from OU115 cleared for the approach

Coordination

Before any session, the following coordination must be made:

With Tower: Runways in use (TWR decision), current ATIS information (TWR decision), mode of operation (APP decision)

With Center: STARs to use (APP decision), holdings usage (only if necessary – APP and CTR responsibility but APP decision)

All handovers are carried out as silent handovers as long as the relevant LOAs or additional agreements do not define a different procedure.