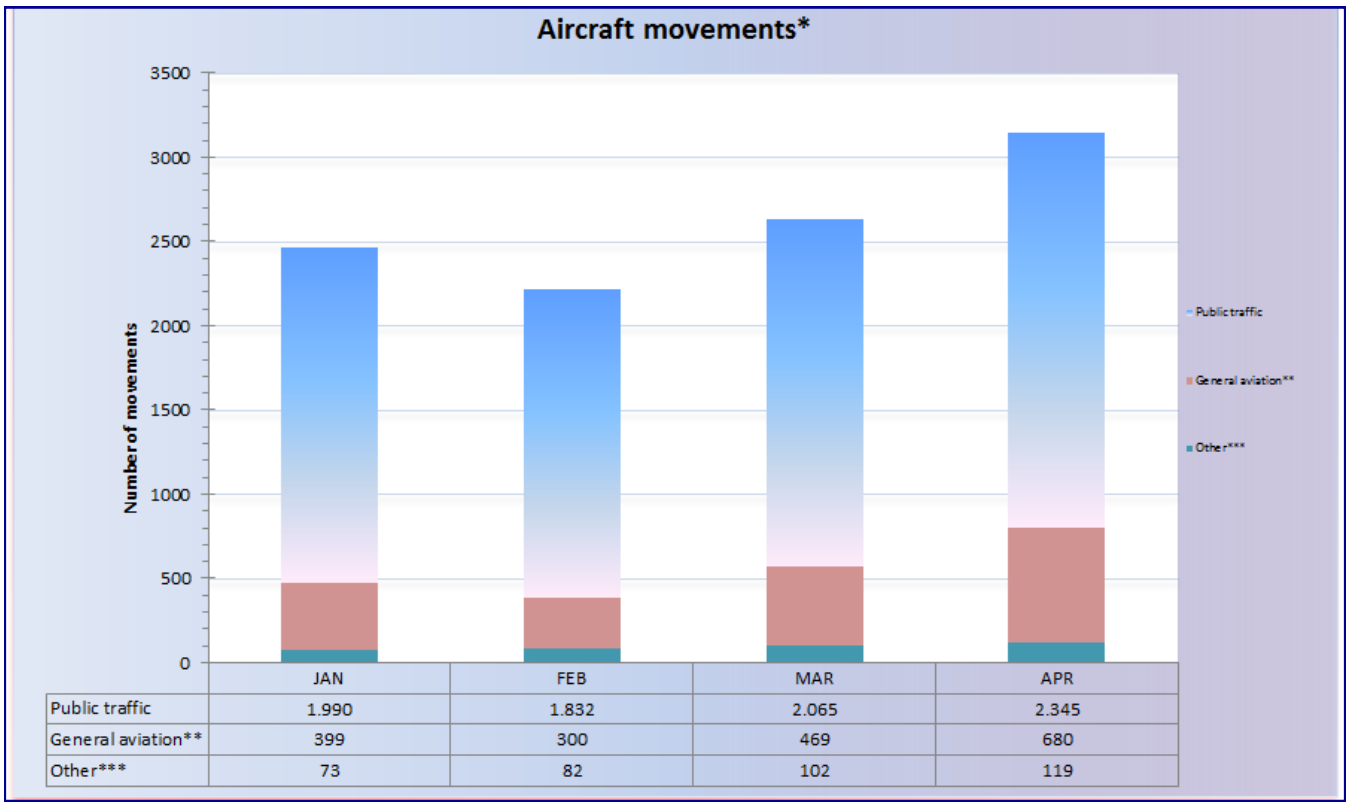
REPORT ON NOISE MEASUREMENTS

for the period JANUARY - APRIL 2018

1. TRAFFIC FIGURES - aircraft movements

Information on aircraft movements in the first four months show a slight increase, compared to the same time period last year. There were 10.456 aircraft movements, which is 6,0% more compared to the same time period last year. The data are:

- 2.462 aircraft movements in January, which is 11,3% more compared to the same time period last year,
- 2.214 aircraft movements in Febraury, which is 3,1% more compared to the same time period last year,
- 2.636 aircraft movements in March, which is 7,2% less compared to the same time period last year,
- 3.144 aircraft movements in April, which is 18,2% more compared to the same time period last year.



	JAN	FEB	MAR	APR
Public traffic	1.990	1.832	2.065	2.345
General aviation**	399	300	469	680
Other***	73	82	102	119

* landing or takeoff of aircraft

** commercial, business and private aircrafts and helicopters which have a maximum of 19 seats and do not exceed the weight of 44 tons

***school, position or technical flights (without passengers)

Source: Fraport Slovenija, d.o.o.

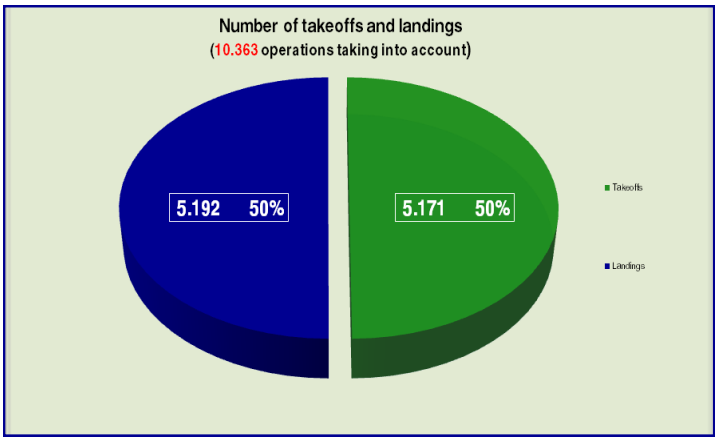
2. NOISE POLLUTION SOURCE DATA - measuring terminals

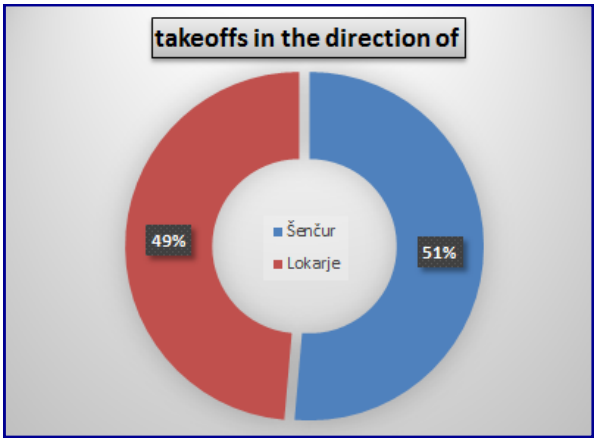
In the first four months of this year measuring terminals have taken 10.363 operations* (5.171 takeoffs and 5.192 landings) into account. Overflights of school aircraft flights and most of military and police helicopter flights are not included in this number.

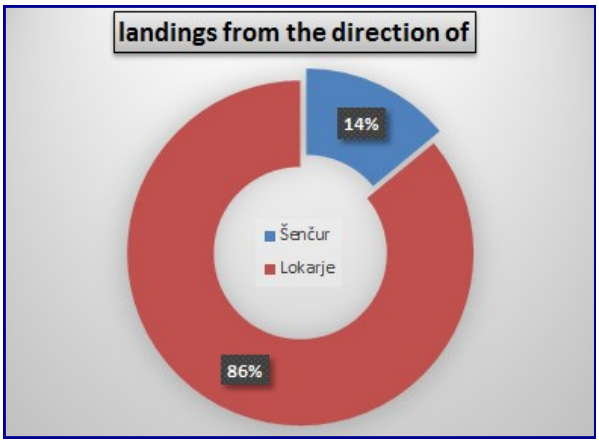
The share of takeoffs in the direction of Šenčur was 51% and the share of landings from the direction of Šenčur was 14%; also in the direction of Lokarje 49% and from the direction of Lokarje 86%.

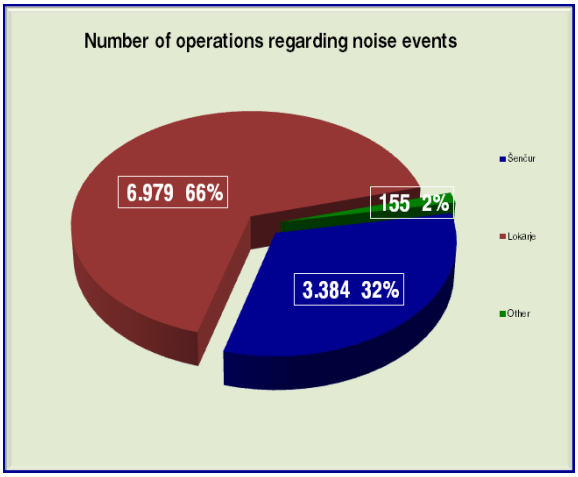
Including the overflights, the measuring terminals have taken 10.518 operations into account, of which 3.384 (32%) operations are the takeoffs and landings in/from the direction of Šenčur and 6.979 (66%) operations are the takeoffs and landings in/from the direction of Lokarje. The number of other events, related to overflights of school aircraft flights and military and police helicopter flights, is 155 (2%).

*** Note: 0.9% of operations is not included due to uncertainty of data – the impact on the result of noise is negligible < 0,04 dB(A)**









Source: ZVD Institute of Occupational Safety d.o.o.

3. MEASUREMENT RESULTS - noise indicators

The following environment noise indicators were calculated in the first four months of this year, based on the measured noise data of individual events, associated with air traffic (takeoffs, landings, overflights of aircrafts):

Measuring terminal	Noise indicators [dB(A)] - monthly average																Limit values [dB(A)]			
	January				February				March				April				*Decree on limit values for environment noise indicators*			
	L_D	L_E	L_N	L_{DEN}	L_D	L_E	L_N	L_{DEN}	L_D	L_E	L_N	L_{DEN}	L_D	L_E	L_N	L_{DEN}	L_D	L_E	L_N	L_{DEN}
1 Šenčur I.	55	53	42	55	55	53	43	55	57	55	45	57	57	56	46	58	58	53	48	58
2 Lokarje	50	50	40	51	47	47	39	49	49	49	41	51	50	49	44	52	58	53	48	58
3 Kranj	53	51	41	53	52	49	44	53	no data*								58	53	48	58
4 Šenčur II.	53	50	43	53	50	48	38	50	53	50	38	52	53	52	39	53	58	53	48	58

* **Note:** Due to technical problems with access to measured data, there are no estimated indicators at measuring point 3 in March and April. If data become available, a new version of this report will be published.

Source: ZVD Institute of Occupational Safety d.o.o.

The table shows the daily calculated noise indicators:

- **Indicator L_d** in dB(A) shows the daily noise load, due to the air traffic. The day time lasts between 6^{00} and 18^{00}. Depending on the number of noise events at each measuring point, we determined the average hourly noise load, on the basis of data on noise levels in dB (A) and the duration of the events t(s), which was sent to us as measurement data, by the measuring terminal. We use this hourly noise load for determing individual noise indicator.
- **Indicator L_e** in dB(A) shows noise load, similar to the L_d indicator, but at evening time that lasts between 18^{00} and 22^{00}. This is the time period when people are more susceptible to the disturbance. Therefore, 5 dB (A) is added during this time period.
- **Indicator L_n** in dB(A) describes the night time that lasts between 22^{00} and 06^{00}. It is assumed that the population, around the airport (or other noise sources), is resting during this time period. Disturbances during this time period may have a profound impact on health and relaxation. Therefore, 10 dB (A) is added during this time period.
- **Indicator L_{den}** in dB(A) represents the total daily noise load.

Regarding the seriousness of the excess, we marked the excessive noise indicators with a green highlighted print, for excesses up to 3 dB (A), with a blue highlighted print for excesses between 3 and 6 dB (A) and with a red highlighted print for excesses over 6 dB (A). A research on the noise pollution source is carried out for all the red and blue markings.

NOTE: average noise values are determined in accordance with the requirements of the Decree on limit values for environment noise indicators (OG RS No. 105/2005, 34/2008, 109/2009 in 62/2010). Calculations are based on measured noise levels sent from different measuring terminals. They measure total noise and overflight noise of each aircraft. Weather conditions have a partial impact on results, which we are trying to eliminate as far as possible. The wind and thermal inversion still have a partial impact on the measuring results. Based on the SIST ISO 1996-2 standard, data have the uncertainty of about 3 dB (A), since it is not possible to completely exclude the effects of weather conditions (rain, wind, thermal inversion). This means that the actual result varies within -3 and +3 dB (A) of the written.

4. ANALYSIS - the loudest aircrafts and noise trend

The following events, in conjunction with takeoffs and landings, were the loudest in the first four months of this year:

Šenčur I. overflight measurements

Aircraft type	*arrival (ARR) depart. (DEP)*	*Date and time of the event*	*Current noise level EPNL in dB(A)*
Canadair RJ 900	DEP	21.2.2018 14:02 duration of the event 30 seconds	109
Airbus A319	ARR	21.3.2018 22:31 duration of the event 38 seconds	103
Fokker 100	ARR	21.3.2018 15:59 duration of the event 40 seconds	101
Embraer 170	DEP	7.4.2018 17:30 duration of the event 26 seconds	101
Fokker 100	ARR	18.4.2018 16:27 duration of the event 22 seconds	101
Aerospool WT-9	ARR	22.3.2018 16:17 duration of the event 27 seconds	100
Embraer 190	ARR	28.3.2018 14:45 duration of the event 43 seconds	100
DHC-8-400 Dash 8Q	DEP	21.2.2018 13:44 duration of the event 25 seconds	99
Fokker 100	ARR	22.3.2018 17:34 duration of the event 23 seconds	99
Airbus A319	ARR	22.4.2018 10:42 duration of the event 29 seconds	99

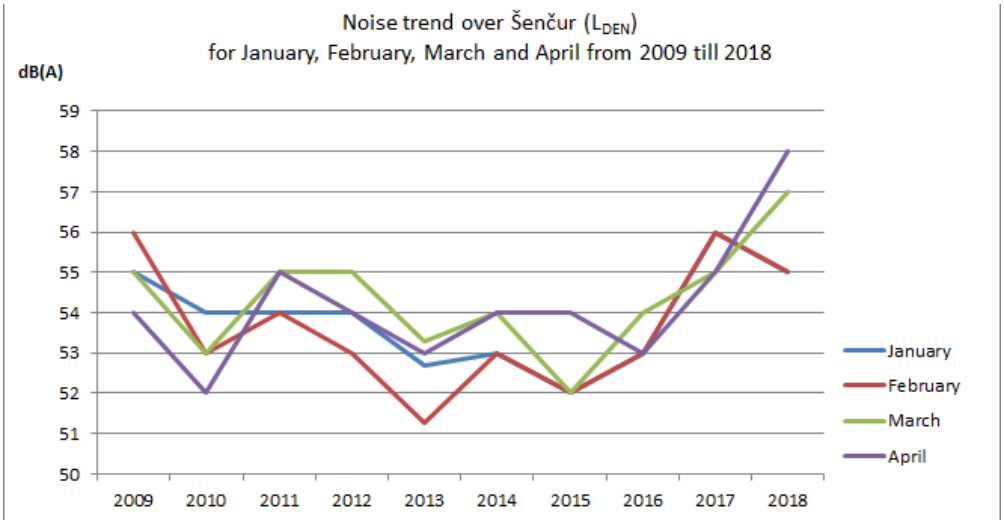
Lokarje overflight measurements

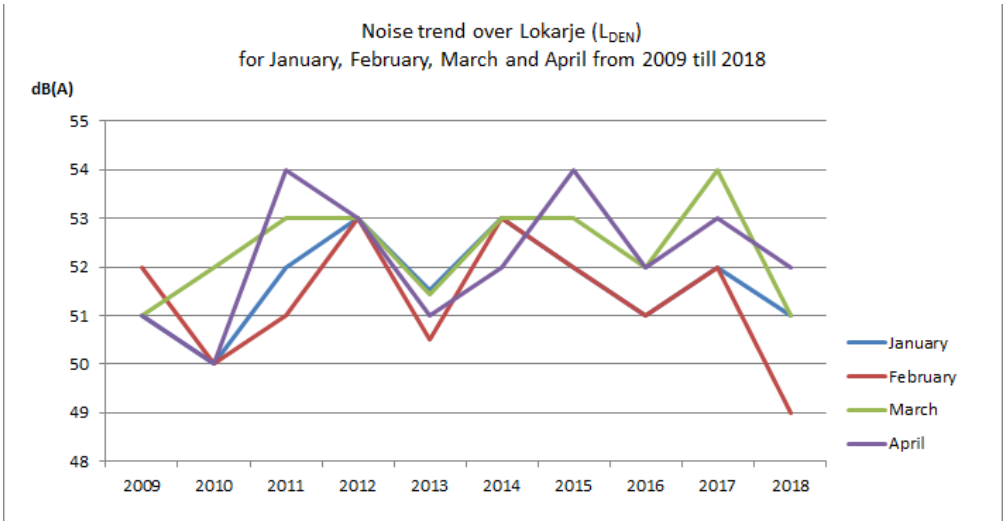
Aircraft type	*arrival (ARR) depart. (DEP)*	*Date and time of the event*	*Current noise level EPNL in dB(A)*
Airbus A319	DEP	10.4.2018 12:37 duration of the event 32 seconds	94
Airbus A319	DEP	26.4.2018 20:44 duration of the event 30 seconds	93
Airbus A319	DEP	12.4.2018 12:28 duration of the event 34 seconds	93
Airbus A319	DEP	16.4.2018 12:39 duration of the event 28 seconds	93
Airbus A319	DEP	10.4.2018 12:32 duration of the event 33 seconds	93
Airbus A319	DEP	12.4.2018 20:18 duration of the event 32 seconds	93
Piper PA-28	DEP	23.1.2018 14:33 duration of the event 44 seconds	93
Airbus A321	DEP	4.4.2018 20:22 duration of the event 35 seconds	92
Airbus A319	ARR	27.1.2018 15:19 duration of the event 13 seconds	92
Airbus A321	DEP	31.1.2018 20:26 duration of the event 34 seconds	92

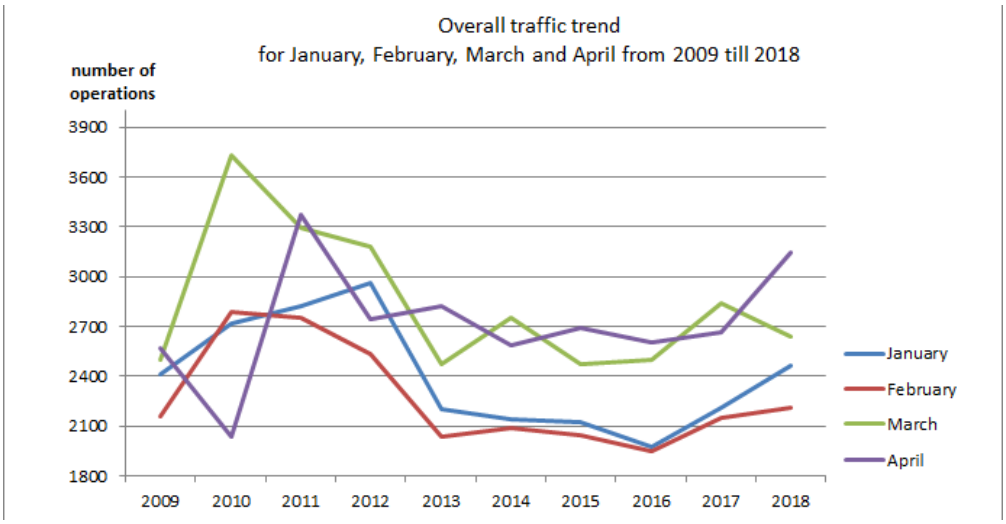
Source: ZVD Institute of Occupational Safety d.o.o.
Fraport Slovenija, d.o.o.

4. ANALYSIS - the loudest aircrafts and noise trend

The trend of noise changes over Šenčur and Lokarje from 2009 to 2018:







Source: ZVD Institute of Occupational Safety d.o.o.
Fraport Slovenija, d.o.o.