



Data link Network Operational Status Report

January 2023 – Developed 16/02/2023

This report is the monthly 'Data link Network Operational Status Report' as identified in the DPMF Report Catalogue available from the [DPMF OneSky team web site](#). It provides a summary of the operational status and technical performance of data link in Europe covering a rolling 12 month period for monthly statistics ending in January 2023.

The report covers three main areas of the datalink operations in Europe:

1. Operational Status
2. Technical Performance
3. VDL Mode 2 Performance

For each of the three areas above different metrics are presented. A detailed definition of the metrics used in this report is available in the DPMF Report Catalogue. In the following report, the identifier for each metric used in the DPMF Report Catalogue is shown in angled brackets e.g. <N-1>.

Notes:

- When ANSPs are providing new LISAT logs to DPMF, the metrics are updated accordingly (retroactively, when data for previous periods are provided). Therefore, some values presented in this report might evolve from past reports.
- As from January 2023, this report includes data from EETT (Estonia).
- As from December 2022, this report includes data from EISN (Ireland).
- As from November 2022, this report includes data from LPCC (Portugal).
- As of May 2022, this report does not include data from LFEE (France) due to the migration to the new system. Provision of data is expected to resume in March 2023
- As from April 2022 this report includes data from EYVC (Lithuania).
- As from March 2022 this report includes data from LIBB, LIMM, LIPP, LIRR (Italy).
- As from March 2022 this report includes data from LHCC (Hungary).
- This report assess the technical performance of data link above the level from which each ATSU provides the data link service, using a single level for each Centre as described in https://ext.eurocontrol.int/WikiLink/index.php/Implementation_Status_Table

1. Operational Status

Figure 1-1 on the following page provides a status for each FIR/UIR covered by the DLS IR. The top map shows the operational status of each centre (<N-4>) as of end of the month. The map below shows which centres are providing LISAT data to NM as of end of month. The table on the right shows per centre for the month: i) the number of flights operating above FL285, ii) The Provider Abort rate (only for those centres providing LISAT data to NM), iii) what percentage of flights indicate that they are capable of performing CPDLC over the ATN (i.e. file 'J1') and iv) what percentage of the flights operating above FL285 are actually seen using CPDLC over the ATN.

ANSPs with service limitations and operational restrictions

The table below identifies the current service limitations and operational restrictions. Changes in this table compared to previous reports are:

- operational restriction in LFMM in France (no support for flight crew clearance request) has been removed (effectively since December 2022)

Centre	Datalink service operational restrictions
France (LFFF, LFRR)	All datalink services are provided but flight crew clearance requests are not supported and a systematic controller response "Unable" is uplinked.
Germany (EDUU)	Airspace control in the south-eastern part of Germany below FL315 is delegated to Munich ACC (EDMM). In this airspace, datalink services are available only after prior coordination (i.e. when EDUU agrees to take or maintain control of flight). Datalink services are provided only to Logon-List a/c
MUAC (EDYY)	Datalink services are provided only to Logon-List a/c
Switzerland (LSAG, LSAZ)	Datalink services are provided only to Logon-List a/c

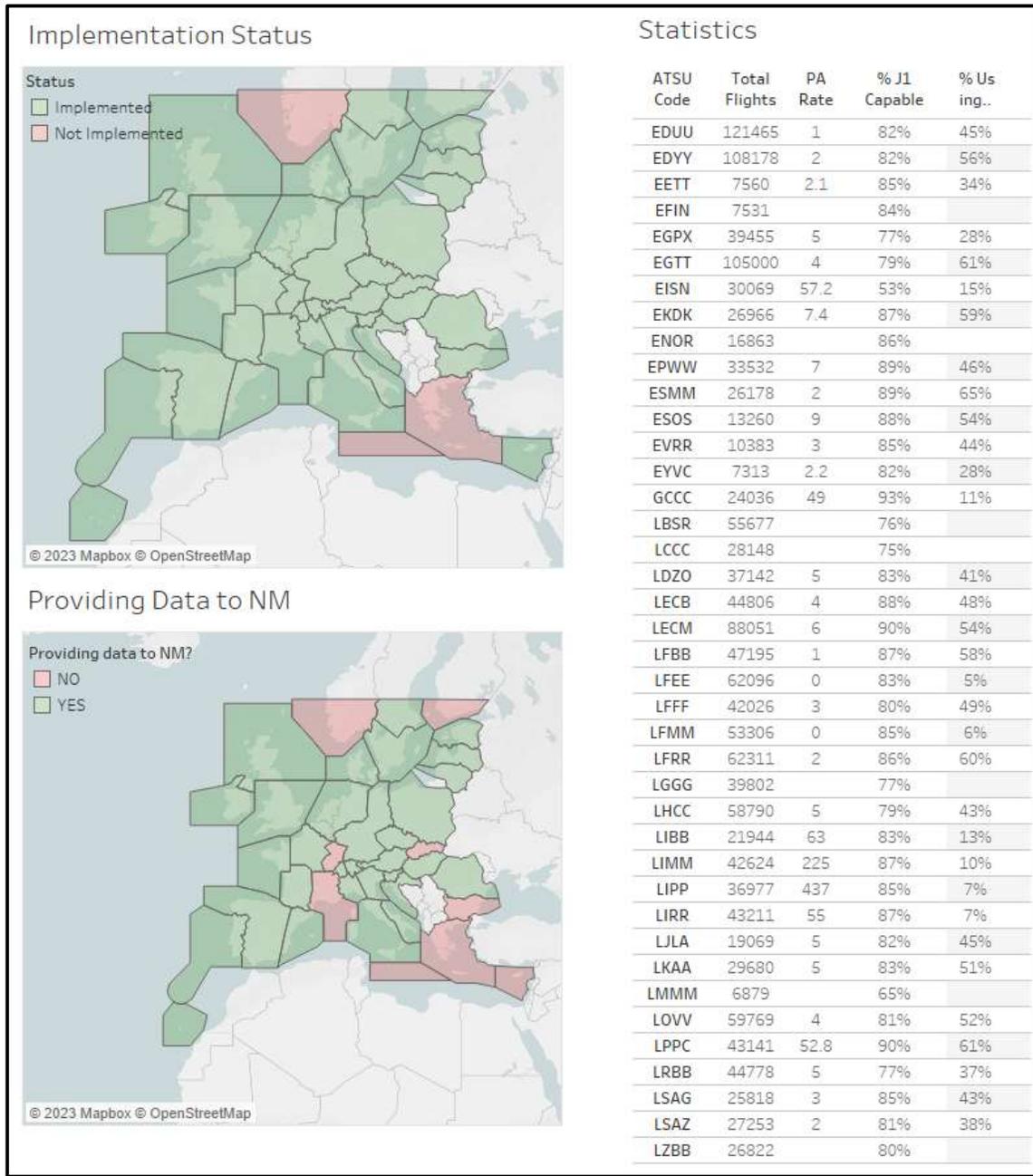


Figure 1-1: Current operational status of data link over the ATN

CPDLC / ATN Flights

Figure 1-2 presents data only for flights operating above FL285 in the DLS airspace. It shows what percentage of flights in that airspace¹ file 'J1' in their flight plan <N-1> and what percentage indicate in the flight plan that the aircraft is exempt. For this month, 82,1% of flights indicated the capability to perform CPDLC over ATN/VDL Mode 2. 14.4% (shown in red) indicate they are exempt. Considering the known exemptions, NM estimates that about 1.2% of the filed FPLs are likely contravening the DLS IR (shown in green).

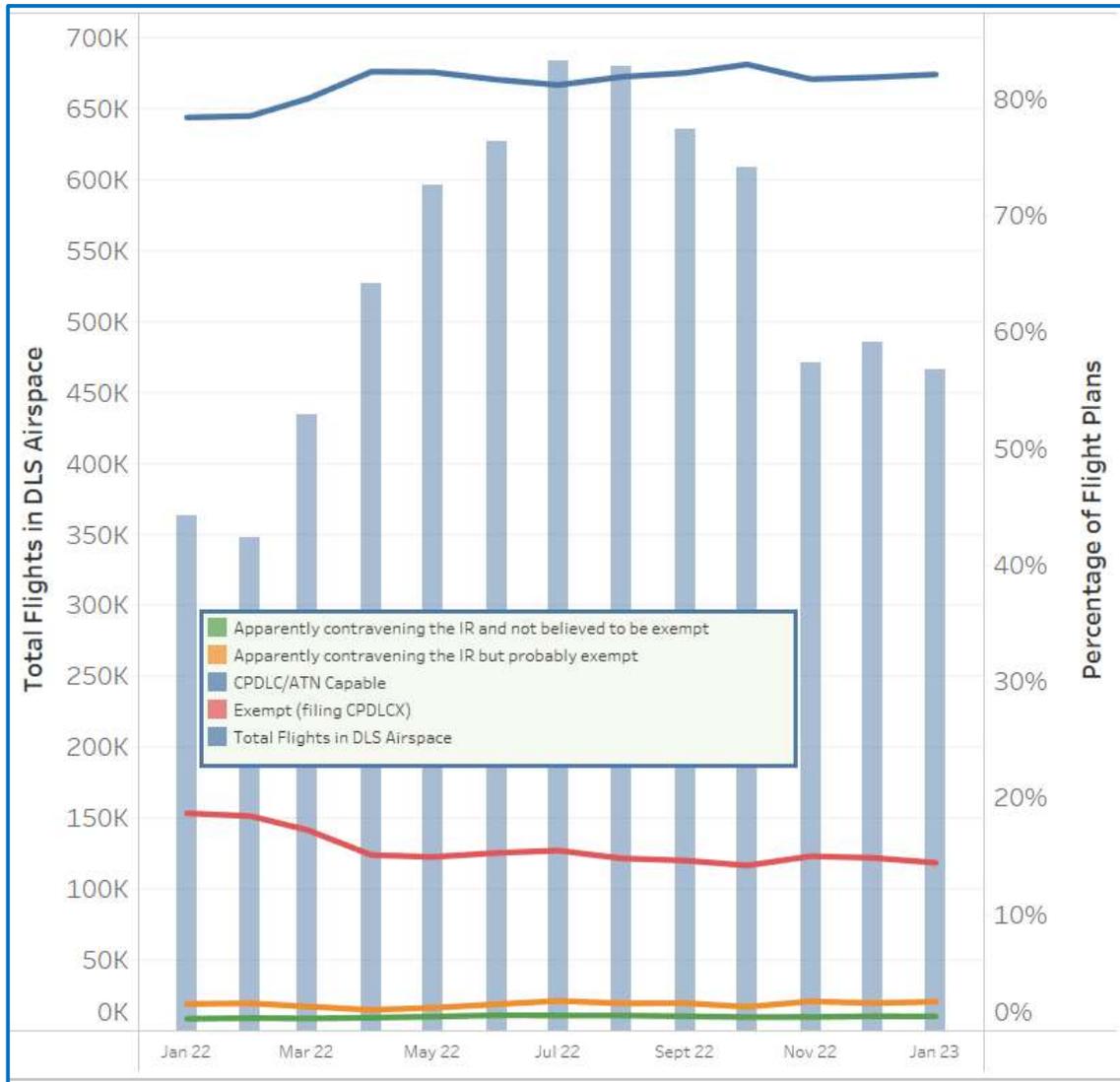


Figure 1-2: Proportion of flights capable of using CPDLC over ATN/ VDL Mode 2

¹ EHAUFIR, LOVVUFIR, LECBUUFIR, LIBBUUFIR, EBUUFIR, GCCCUUFIR, GCCCUUFIR, LFFUUFIR, EDVUFIR, LPPCUUFIR, EGTUUFIR, LECMUUFIR, LIMMUUFIR, EDUUFIR, LIRRUUFIR, EGPXUUFIR, EISNUUFIR, LZBBUUFIR, LRBBUUFIR, LHCCUUFIR, EKDKUUFIR, LULAFUUFIR, LCCCUUFIR, LKAUFUUFIR, LBSRUUFIR, EPWWUUFIR, EFINUUFIR, LGGGUUFIR, LMMMUUFIR, EVRUUFIR, ESAAUUFIR, EETUUFIR, EYVLUUFIR.

2. Technical Performance

Overall Monthly Provider Abort Rate

Figure 2-1 below shows the monthly PA rate <0-23> aggregated for all ANSPs providing data to LISAT. The target value is 1 PA per 100 hours CPDLC (shown as a dashed line on the graph below). The overall average rate for the month was 7.2 PAs per 100 hours.

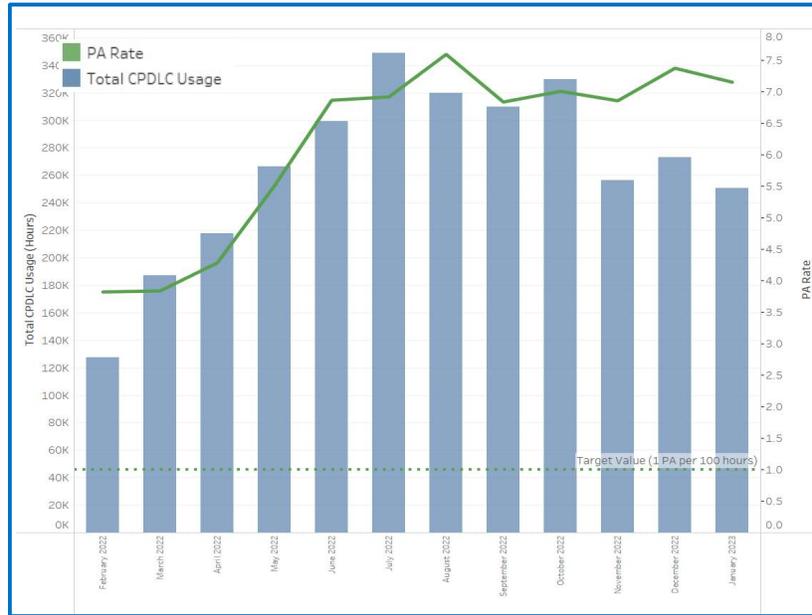


Figure 2-1: PA rate

Figure 2-2 below shows the monthly PA rate of aircraft on the [Logon List](#) against aircraft not on the Logon List using only data from centers that do not support the Logon List².

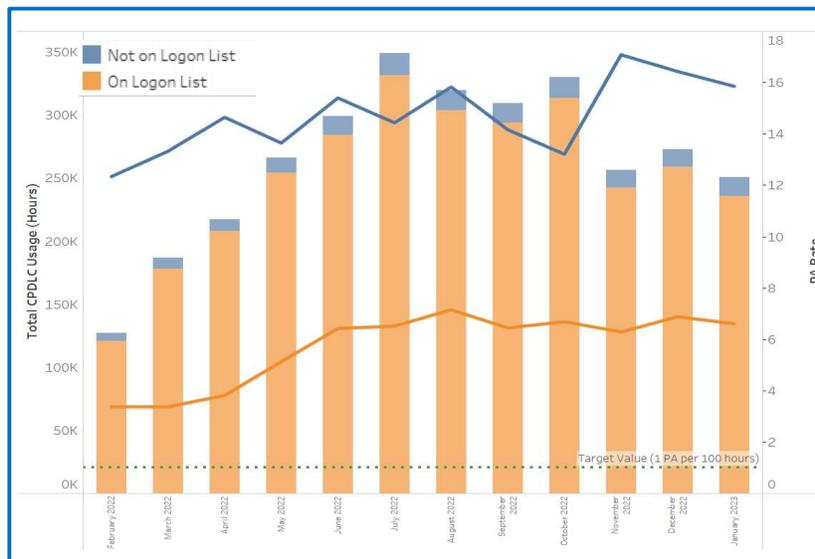


Figure 2-2: Logon Listed Aircraft PA rate

Monthly PA rate per Centre

Atsu Code	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023
EDUU	2,2	2,3	2,1	2,5	2,6	2,5	2,0	2,4	1,9	1,4	1,6	1,1
EDYY	2,0	2,5	2,9	3,3	3,7	3,0	2,7	3,2	2,8	2,4	2,7	1,9
EETT												2,3
EGPX	4,5	6,0	6,5	5,5	6,3	5,7	7,0	7,1	6,0	5,5	5,7	4,8
EGTT	2,9	3,2	3,7	3,7	3,7	4,0	4,1	4,9	3,7	3,4	4,3	3,6
EISN											41,2	55,6
EKDK	9,2	7,7	9,1	9,6	7,0	6,3	6,6	6,6	7,8	7,2	7,7	8,4
EPWW	1,6	2,1	2,2	2,8	4,8	3,6	2,6	3,1	2,7	3,6	3,3	5,8
ESMM	2,5	2,0	2,0	3,3	3,3	2,8	2,4	2,2	2,8	2,4	2,7	2,3
ESOS	11,0	3,8	4,5	5,2	4,5	3,8	4,1	5,9	8,9	4,9	5,2	3,6
EVRR	4,3	3,2	3,9	3,1	3,6	2,8	4,5	3,3	3,5	3,4	5,3	3,2
EYVC			2,6	4,0	1,9	3,4	1,8	2,8	2,2	3,3	2,3	2,4
GCCC	42,8	41,1	41,9	42,7	49,1	45,1	47,6	44,0	18,2	40,1	44,6	47,9
LDZO	8,4	8,2	8,1	8,8	11,8	19,3	12,2	11,4	10,6	7,3	6,5	5,2
LECB	5,6	4,4	4,0	4,6	4,5	4,9	7,8	10,7	3,8	3,5	2,6	2,7
LECM	4,4	4,6	4,7	4,5	4,9	4,9	5,3	5,4	4,8	7,3	6,5	4,9
LFBB	1,1	1,4	1,3	1,1	1,4	1,6	2,8	3,7	1,4	1,5	1,9	1,2
LFEE	1,6	2,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
LFFF	2,4	3,6	3,0	8,6	3,5	2,9	4,2	4,3	4,7	4,5	4,7	4,1
LFMM	6,1	7,2	4,0	8,2	8,3	13,1	10,3	7,5	7,1	6,3	1,0	0,0
LFRR	1,3	1,5		1,3	1,5	1,4	1,7	1,4	1,6	1,7	1,9	1,9
LHCC		5,0	5,2	5,1	4,9	4,9	4,0	4,2	3,2	3,7	3,8	4,7
LIBB	23,5	21,4	23,3	24,6	82,0	143,1	167,4	156,3	122,3	77,5	74,6	65,6
LIMM	10,4	11,1	15,9	22,6	86,7	158,4	216,9	181,2	319,6	204,3	237,5	234,9
LIPP	10,9	15,8	17,3	19,3	155,6	95,3	425,5	357,3	518,7	311,5	429,1	442,6
LIRR	13,9	10,4	14,6	18,6	53,2	152,0	61,2	52,4	66,0	51,3		56,5
LJLA	13,6	5,4	5,8	6,6	7,7	7,6	8,6	7,9	9,8	4,2	5,1	5,2
LKAA	4,5	6,3	5,8	5,6	5,9	5,1	4,2	3,8	4,1	4,2	4,4	5,1
LOVV	6,1	5,0	5,3	6,0	6,3	7,0	6,0	5,3	5,2	4,3	4,1	4,3
LPPC									25,0	33,7	50,6	31,6
LRBB	2,7	3,8	2,7	2,7	3,7	4,1	3,9	4,5	3,1	3,5	3,4	3,6
LSAG	3,0	2,8	2,8	4,3	6,1	16,2	5,0	4,6	4,4	4,7	2,3	3,4
LSAZ	2,0	2,4	2,6	3,2	5,8	15,5	4,2	4,1	4,5	3,2	2,8	2,1

Figure 2-3: Monthly PA Rate per Centre

PA Rate for Major Aircraft Operators

Figure 2-4 below shows the PA rate for the top 30 aircraft operators in terms of usage of CPDLC/ATN over the month. The column “Total CPDLC” displays the total CPDLC session duration in hours while the column “Total Flights” displays the total amount of flights performed during the month.

Aircraft Op..	Total CPDLC ..	Total Flights	PA Rate ..
RZR	48657,05	40.858	7,0
WZZ	17599,11	14.537	2,4
EZY	11795,02	11.051	5,4
DLH	10392,22	11.814	5,4
THY	9388,88	6.510	4,8
BAW	8835,35	7.994	6,3
TAP	7708,83	6.768	18,6
AFR	7058,58	9.624	4,9
SAS	6347,95	6.330	3,4
EJU	6264,81	7.690	12,4
EXS	6245,28	3.239	10,7
VLG	5480,43	7.361	7,8
FIN	5051,54	2.699	5,7
PGT	4745,94	3.018	6,2
EWG	4460,79	4.330	5,2
WUK	3320,10	1.762	4,2
NOZ	3263,63	2.139	4,6
KLM	3108,40	3.520	3,4
IBE	3018,39	3.808	4,3
TRA	3013,00	2.241	2,2
NSZ	2980,16	1.947	3,9
AUA	2843,82	3.420	4,0
SWR	2822,45	3.682	6,0
EIN	2613,12	2.979	6,0
BTI	2599,48	1.672	2,8
RAM	2518,03	1.742	5,0
BEL	2208,85	2.757	2,3
EZS	1734,25	2.391	16,1
LOT	1452,37	1.812	13,8
IBS	1374,19	1.834	8,1

Figure 2-4: PA Rate for the top 30 Aircraft Operators (CPDLC/ATN use)

Monthly PA Rate for various avionics configurations

The figure below shows the monthly PA rate for various avionics configurations for aircraft on the logon list based on the information declared by the airline operators.

Vdr Make	Vdr Model	Cmu Make	Cmu Model	January 2022	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023	
Garmin	GDR66	Garmin	GIA63W	3.28	4.21	6.00	8.36	13.00	12.22	18.89	14.66	12.13	8.57	7.22	9.58	8.73	
			GIA64E	3.44	3.89	3.04	9.01	9.11	13.48	17.18	14.44	15.67	8.58	6.03	6.94	3.87	
Honeywell	EPIC VDR	Honeywell	EPIC CMF	8.51	11.09	7.11	6.67	11.39	11.50	12.26	11.01	9.29	7.23	4.91	4.47	5.24	
			KTR2280A	2.03	1.26	6.20	3.80	17.03	6.83	6.69	12.76	10.39	5.37	10.75	5.10	5.47	
	RTA44D	Airbus	FANS-B+	1.76	2.30	2.46	3.27	2.94	7.06	7.92	8.16	7.18	8.14	5.25	6.18	5.61	
			Honeywell	Mk2+	1.46	1.69	2.48	2.58	1.93	2.54	2.83	1.63	1.60	1.44	2.77	5.03	3.35
	RTA50D	Rockwell Collins	CMU900	1.93	1.29	4.01	5.32	10.15	9.10	13.09	7.40	7.21	3.37	4.75	5.68	4.62	
			Airbus	FANS-A+B									2.14	0.83	0.00	5.37	3.74
				FANS-B+	1.57	2.29	2.70	3.06	3.21	6.53	7.63	8.80	6.65	7.68	6.09	6.67	5.86
			FANS-C	1.67	2.51	2.93	2.74	3.93	6.07	7.45	7.68	6.46	7.04	7.48	8.86	7.48	
		Honeywell	777 AIMS2	69.89	48.53	59.38	40.11	36.41	35.18	32.04	16.97	31.20	17.71	23.64	19.29	29.20	
			Mk2+	4.65	4.17	4.16	4.50	4.78	4.63	4.95	4.70	5.25	5.99	6.23	6.26	6.31	
	Rockwell Collins	CMU900	1.32	1.73	4.80	2.24	2.11	9.24	30.76	3.96							
Rockwell Collins	920	Airbus	FANS-B+	2.45	3.43	3.29	3.36	4.26	9.48	9.07	11.55	8.80	8.29	6.78	7.98	8.17	
			Honeywell	Mk2+	0.00	0.71	3.86	0.95	3.62	4.57	3.73	9.86	10.39	9.69	5.83	6.48	10.04
		Rockwell Collins	CMU900	5.00	2.86	7.81	4.41	3.26	11.73	11.10	7.00	7.46	16.07	3.13	4.20	7.71	
	2100	Airbus	FANS-A+B	2.26	2.48	4.00	3.61	5.92	6.94	5.82	7.48	6.92	6.10	6.38	5.09	4.40	
			FANS-B+	1.63	2.22	2.33	2.81	3.39	6.64	7.23	9.60	7.51	8.01	6.34	6.20	5.90	
			FANS-C	1.47	1.86	2.21	5.25	2.52	3.78	6.29	2.41	2.44	3.11	4.79	7.89	5.92	
		Honeywell	787 CMF	5.27	3.67	4.38	5.13	4.82	5.69	5.89	5.45	5.80	4.52	4.93	6.18	9.79	
			Mk2+	2.38	1.88	1.84	2.79	1.87	2.27	2.83	1.56	1.47	1.26	1.91	2.20	2.36	
	Rockwell Collins	CMU900	3.93	3.39	3.21	4.37	3.28	4.04	4.03	3.82	4.02	3.92	7.09	8.43	7.64		
	2200	Airbus	FANS-A+B	3.82	3.79	3.45	2.83	3.57	3.59	3.92	4.73	5.24	3.99	4.28	4.98	5.27	
			FANS-B+	3.91	4.56	3.20	3.87	3.37	6.03	5.32	10.23	9.17	7.70	5.98	7.48	5.69	
			FANS-C	4.68	2.71	2.47	2.81	2.93	4.51	4.29	5.65	5.70	6.54	12.58	16.49	14.99	
	4000	Rockwell Collins	CMU900	11.56	9.65	11.08	8.12	11.25	9.14	10.43	10.66	10.29	8.54	8.00	5.65	7.62	
			CMU4000	2.40	5.89	2.82	4.95	4.53	6.49	10.26	5.55	5.21	6.25	3.93	3.50	4.40	
RIU-4000			2.80	8.42	9.11	15.82	8.27	12.13	13.71	14.86	7.07	11.03	9.64	5.54	6.63		
RIU-4010			7.54	12.45	10.60	6.82	10.91	10.68	12.72	9.67	10.61	10.66	10.67	10.70	9.67		
Spectralux	Dlink+	Spectralux	Dlink+				9.58	13.14	9.87	9.05	11.12	11.45	12.53	18.05	20.14	23.44	
Thales	EVR750	Airbus	FANS-B+	4.06	4.89	4.08	4.62	5.12	10.32	8.29	10.02	9.69	9.09	6.80	7.50	7.16	
UASC	UL801	UASC	UL801	10.56	9.43	6.99							14.35				

Figure 2-5: Monthly PA rate for various avionics configurations for aircraft on the logon list.

Note: A sample size of at least 250 hours of CPDLC use has been considered for recommendations/decisions for the Logon List aircraft. In the table above, PA rates computed from less than 250 hours of CPDLC session are displayed in grey.

Overall Technical Round Trip Delay-

Figure 2-6 below shows the 95th and 99th percentiles of the technical round trip delay <0-2><0-3>. It represents the delay between the time when a message is uplinked and the time when the ground system receives the corresponding application level acknowledgement (aggregated for all systems providing data to LISAT). As agreed during DPMG8 (May 2020), the TRTD is now computed taking into account downlinked ERROR messages (DM62). This has resulted in an increase of the 99th percentile value.

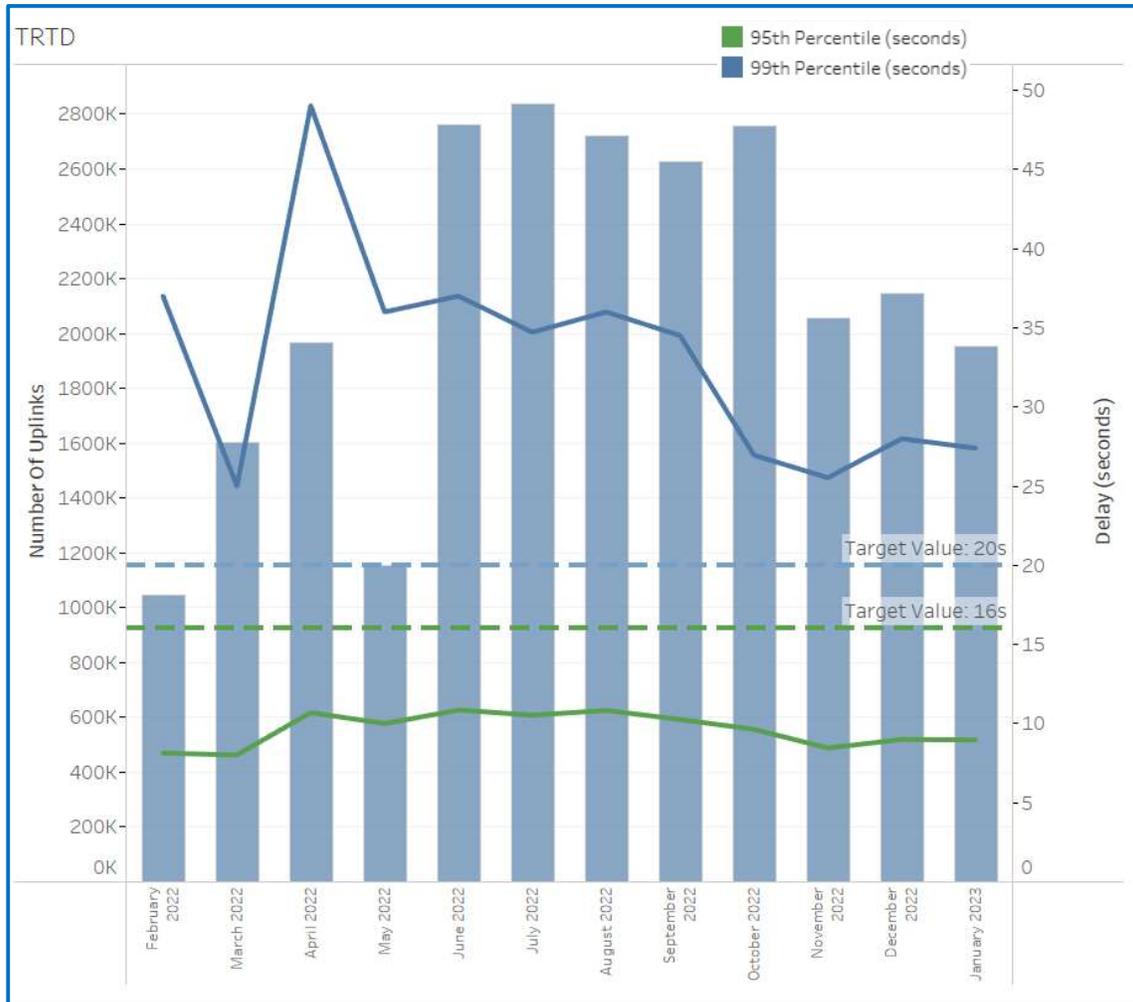


Figure 2-6: Technical Round Trip Delay

Monthly 95th percentile of TRTD per Centre

TRTD 95th												
Atsu Code	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023
EDUU	7,2	7,6	9,5	9,6	10,6	10,7	10,5	10,3	9,7	7,7	8,2	8,1
EDYY	7,4	7,3	9,2	9,3	9,8	9,7	9,5	9,6	9,4	7,7	8,2	7,9
EETT												6,0
EGPX	7,3	7,5	9,0	9,2	9,4	9,4	9,2	9,4	8,4	7,4	8,1	7,7
EGTT	7,2	7,6	9,3	9,2	9,2	9,2	9,1	9,4	8,9	7,6	8,2	7,9
EISN											38,0	20,0
EKDK	8,0	8,0	9,0	9,0	10,0	10,0	10,0	10,0	10,0	9,0	9,0	9,0
EPWW	5,6	5,3	6,2	5,8	6,2	6,3	6,3	6,7	6,2	6,1	6,3	6,6
ESMM	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
ESOS	6,0	6,0	6,0	6,0	7,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
EVRR	8,0	8,0	9,0	10,0	9,0	9,0	9,0	8,0	8,0	7,0	7,0	7,0
EYVC			5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0	5,0
GCCC	23,9	24,2	10,5	38,2	37,2	22,3	29,8	21,6	7,4	11,4	14,1	14,2
LDZO	10,0	10,0	11,0	12,0	13,0	13,0	14,0	14,0	12,0	11,0	10,0	10,0
LECB	8,6	8,3	8,7	7,9	8,5	8,8	8,9	8,5	7,7	7,2	7,6	7,8
LECM	7,6	7,3	8,1	7,3	7,8	7,7	7,7	7,5	7,6	8,2	8,4	8,5
LFBB	7,0	7,0	8,0	8,0	8,0	8,0	8,0	8,0	7,0	7,0	7,0	6,0
LFEE	9,0	10,0	8,0	9,0	10,0	10,0	10,0	10,0	9,0	8,0	8,0	8,0
LFFF	10,0	10,0	12,0	13,0	14,0	14,0	14,0	14,0	14,0	12,0	11,0	11,0
LFMM	8,0	9,0	10,0	11,0	10,0	10,0	11,0	10,0	9,0	8,0	6,0	6,0
LFRR	7,0	8,0		9,0	9,0	9,0	8,0	8,0	8,0	7,0	8,0	7,0
LHCC		8,0	9,0	9,0	10,0	10,0	11,0	10,0	9,0	8,0	9,0	9,0
LIBB	12,9	8,3	16,2	11,1	15,1	12,8	15,9	15,8	14,9	14,9	14,0	13,6
LIMM	38,2	14,0	48,8	24,7	26,2	38,3	27,4	23,6	23,2	41,6	37,5	30,0
LIPP	27,4	13,2	42,5	23,0	29,7	34,5	28,1	23,9	24,6	40,9	37,8	37,1
LIRR	22,6	9,2	37,8	13,3	17,1	20,3	24,3	16,6	14,2	15,7		14,6
LJLA	12,0	12,0	14,2	14,8	17,5	18,2	18,3	17,2	15,7	12,8	12,8	12,8
LKAA	7,0	7,0	10,0	8,0	9,0	9,0	9,0	9,0	8,0	7,0	10,0	9,0
LOVV	10,0	10,0	11,0	12,0	13,0	13,0	13,0	13,0	12,0	10,0	10,0	10,0
LPPC									13,9	16,3	56,5	33,6
LRBB	6,1	6,2	6,7	6,6	7,3	7,6	7,7	7,8	7,0	6,8	7,0	7,6
LSAG	9,0	10,0	11,0	12,0	13,2	13,3	14,5	13,7	11,4	9,7	10,4	10,5
LSAZ	9,0	10,0	13,0	14,0	15,9	15,6	16,1	15,6	13,9	11,2	11,4	11,0

Figure 2-7: Monthly 95th percentile of TRTD per Centre

Monthly 99th percentile of TRTD per Centre

TRTD												
Atsu Code	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023
EDUU	24,0	34,5	39,3	37,2	44,8	41,6	39,9	39,2	27,2	20,8	21,6	21,5
EDYY	21,6	21,7	28,8	31,0	29,6	26,6	26,7	26,7	24,9	21,0	21,7	20,9
EETT												14,0
EGPX	21,9	21,6	37,4	39,9	37,5	28,6	36,9	34,6	22,6	19,1	20,0	18,5
EGTT	19,0	21,5	24,7	24,0	23,5	22,5	22,7	24,2	22,0	21,2	21,9	21,5
EISN											184,7	147,6
EKDK	19,0	18,0	18,0	20,0	24,0	21,0	21,0	21,0	20,0	18,0	19,0	18,0
EPWW	12,6	12,9	14,9	13,1	21,1	21,3	21,0	21,3	15,4	20,6	16,6	21,4
ESMM	13,0	12,0	13,0	14,0	14,0	13,0	14,0	14,0	13,0	13,0	13,0	13,0
ESOS	13,0	13,0	14,0	14,0	15,0	13,0	15,0	14,0	13,0	12,0	13,0	12,0
EVRR	37,0	37,0	37,0	38,0	38,0	31,0	37,0	36,1	17,0	16,0	15,0	16,0
EYVC			13,0	16,0	14,0	17,2	11,9	12,0	9,0	9,0	10,0	9,0
GCCC	89,1	140,0	83,6	107,8	85,9	63,7	91,0	88,8	35,2	87,5	107,4	65,9
LDZO	27,0	32,0	29,0	30,0	35,0	34,0	37,0	37,0	31,7	28,0	27,0	25,0
LECB	38,3	25,8	23,1	21,8	22,7	22,0	24,0	22,5	20,6	19,4	18,4	21,8
LECM	38,4	37,7	38,1	25,9	38,1	28,4	27,7	29,0	27,0	42,7	39,6	38,6
LFBB	13,0	14,0	14,0	15,0	16,0	17,0	17,0	16,0	15,0	13,0	14,0	14,0
LFEE	16,0	19,0	18,0	19,0	21,0	22,0	21,0	21,0	20,0	17,0	17,0	18,0
LFFF	19,0	21,0	24,0	25,0	34,0	34,0	34,0	34,0	31,0	27,0	28,0	25,0
LFMM	19,0	23,0	24,0	24,0	29,0	31,0	31,0	28,0	23,0	20,0	15,0	13,0
LFRR	14,0	15,0		18,0	19,0	20,0	19,0	19,0	18,0	17,0	18,0	18,0
LHCC		17,0	18,0	20,0	23,0	26,0	26,0	26,0	19,0	16,0	17,0	18,0
LIBB	502,1	31,7	279,5	38,4	76,3	47,2	86,3	99,9	84,9	86,3	85,7	78,4
LIMM	182,1	97,5	184,3	144,7	164,2	180,0	169,0	148,1	155,3	184,2	182,3	181,0
LIPP	177,1	87,7	182,5	127,2	163,0	151,9	160,4	125,1	165,8	183,9	186,4	181,8
LIRR	601,1	84,7	385,0	89,7	103,2	124,0	146,4	101,4	97,6	94,3		90,8
LJLA	39,2	38,0	43,6	49,8	59,7	59,8	63,4	56,9	54,5	34,5	28,4	31,5
LKAA	17,0	18,0	33,0	19,0	28,0	37,0	22,0	22,0	20,0	18,0	26,0	29,0
LOVV	37,0	37,0	37,0	37,0	38,0	37,0	37,0	37,0	32,0	23,0	28,0	28,0
LPPC									122,2	146,1	186,8	181,9
LRBB	22,0	29,1	21,9	23,1	22,3	24,2	29,4	35,2	21,4	21,8	22,6	22,7
LSAG	21,9	26,0	38,0	38,0	46,0	43,1	52,0	45,6	32,1	26,1	28,2	27,4
LSAZ	25,0	31,0	47,0	46,0	69,0	61,4	62,2	53,8	47,0	30,1	31,5	27,2

Figure 2-8: Monthly 99th percentile of TRTD per Centre

Overall Technical Continuity

The graph below shows the ‘Technical Continuity’ (<0-25>). This is the probability that a LACK is received for an uplink message before the technical response timer expires i.e. within 40 seconds.

Due to database issue, data is not available
Figure 2-9: Technical Continuity

Technical Continuity per Centre

Due to database issue, data is not available
Figure 2-10: Technical Continuity per Centre

3. VDL Mode 2 Performance

The following metrics are computed based on the available data from the VGS logs provided to NM by ARINC and SITA. ENAV is currently evaluating how to also provide to NM their VGS logs.

Before April 2022, the logs contained the AVLC traffic recorded at each VGS during the 24hrs of the first Friday³ of each month (one dataset per month).

From April 2022, the logs now contain AVLC traffic recorded at each VGS during the 24hrs of each Fridays⁴ (one dataset per week). The aggregated number of AVLC frames taken into account per month for the metrics below has then increased compared to the data provided before April 2022. The increase in the number of AVLC frames used to compute the metrics improves the confidence in the metric value (narrower confidence interval) and any possible observed changes in the metric values before/after April 2022 should not be accounted to the increase of data.

To keep the trend of the AVLC traffic volume comparable with previous reports (prior to April 2022) it is now expressed as a daily average traffic volume for each month.

From April 2022, the statistics are no longer filtered on aircraft on the logon-list. This filtering measure was set up before April 2021 when VGS logs from ACSPs were incomplete.

³ Friday is observed to have the highest flight traffic of the week.

⁴ The frequency of log provision has been increased from one day per month to one day per week.

AVLC Round Trip Time

The graph below shows the cumulative distributions per frequency (and per CSP) for the AVLC Round Trip Time (RTT) of acknowledged AVLC INFO frames conveying ATN packet considering all the VGS logs. The 95th and the 99.9th percentile of CSP allocation from ED-120 and ED-228A are also provided for information (red and blue dashed lines). Please note the logarithmic scale of the delays.

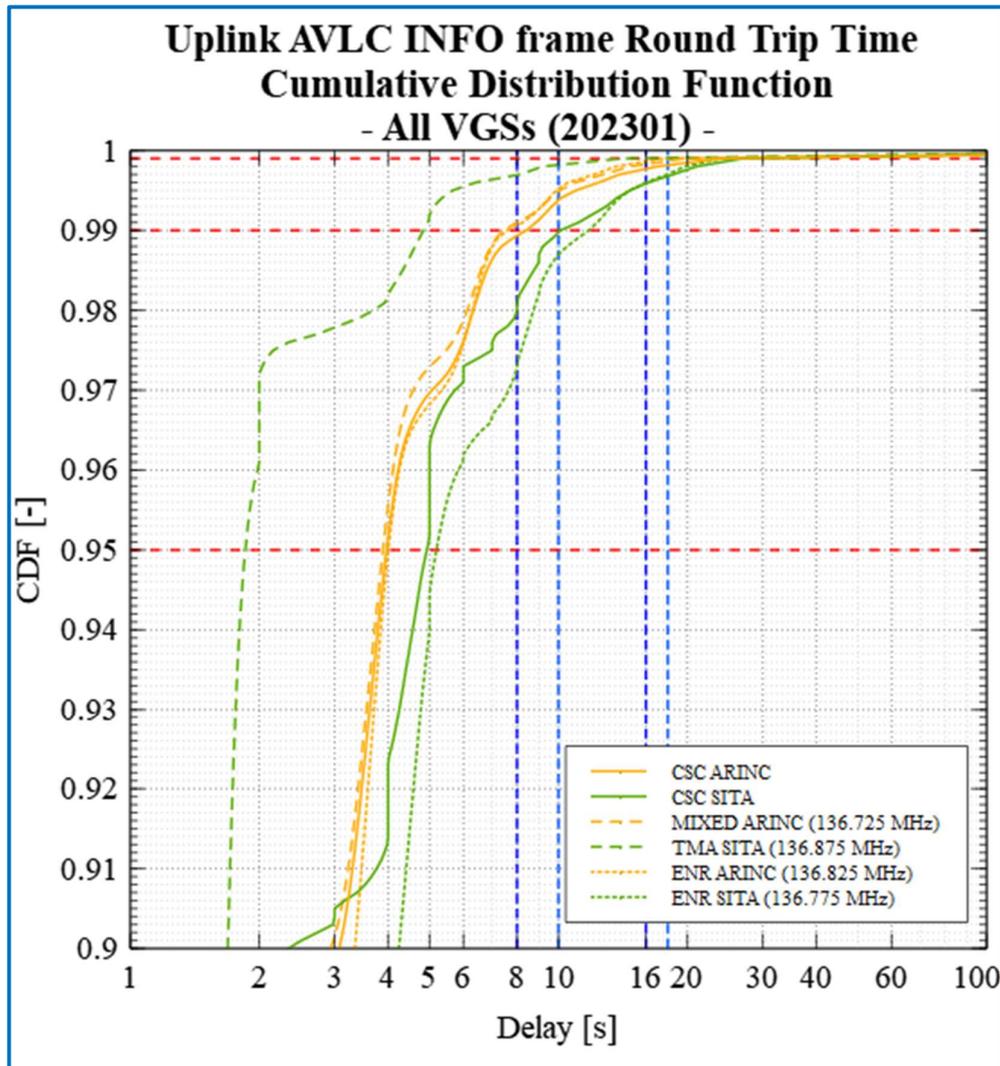


Figure 3-1: AVLC Round Trip Time

AVLC Reliability

The graph below shows the cumulative distributions per frequency (and per CSP) for the AVLC Reliability⁵ of AVLC INFO frames conveying ATN packet considering all the VGS logs. The 95th and the 99.9th percentile of CSP allocation from ED-120 and ED-228A are also provided for information (red and blue dashed lines). Please note the logarithmic scale of the delays.

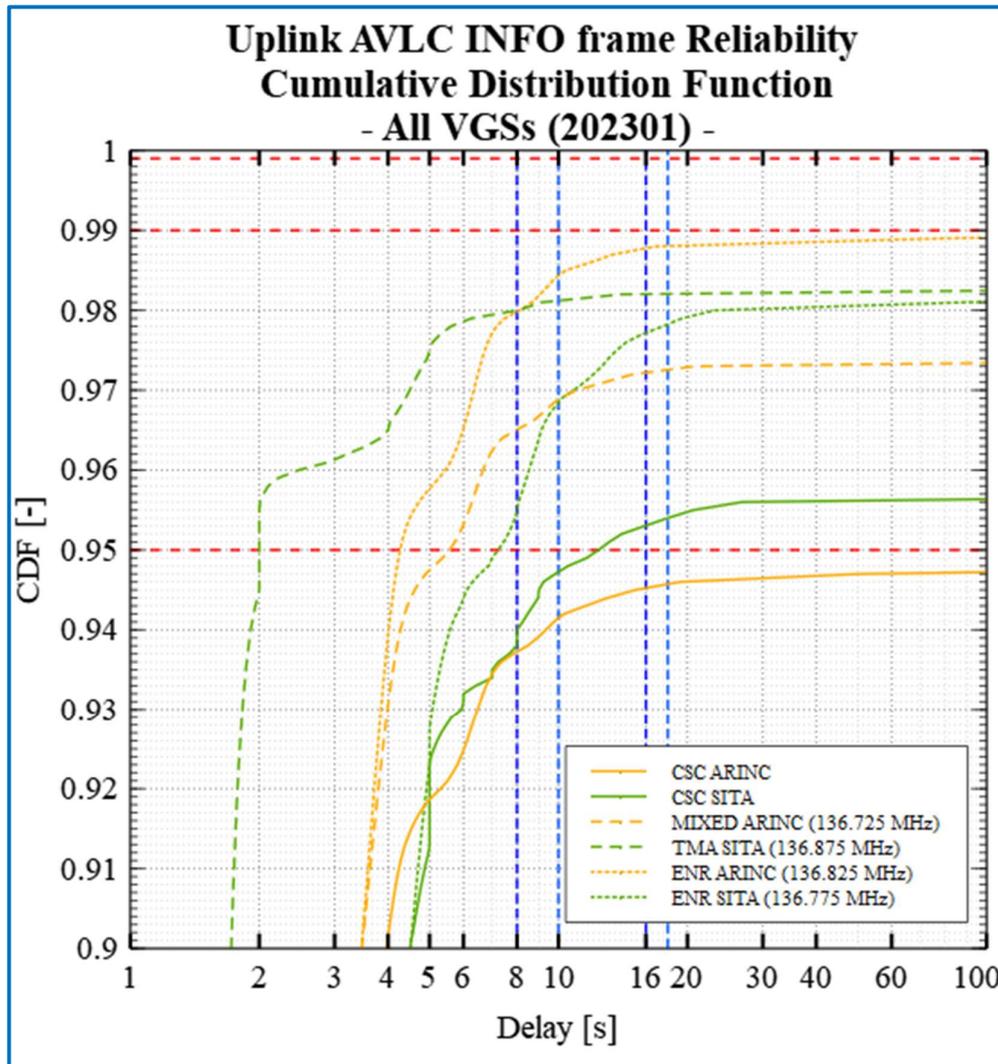


Figure 3-2: AVLC Reliability

Note: AVLC RTT and Reliability are related to each other in the following way: AVLC RTT only consider acknowledged AVLC frames while Reliability consider non-acknowledged ones (lost frames).

⁵ Reliability is defined as the probability that an AVLC frame is acknowledged before a specific time. An "infinite" duration is taken for AVLC frames not acknowledged.

Number of retransmissions

The graph below shows the cumulative distributions per frequency (and per CSP for the CSC) for the number of retransmissions needed before acknowledgement of uplink AVLC INFO frames conveying ATN packet considering all the VGS logs. N=0 represents successes on the first attempt, N=1 to N=5 represent successes on the first to the fifth retransmissions and N>5 represents N2T1 events.

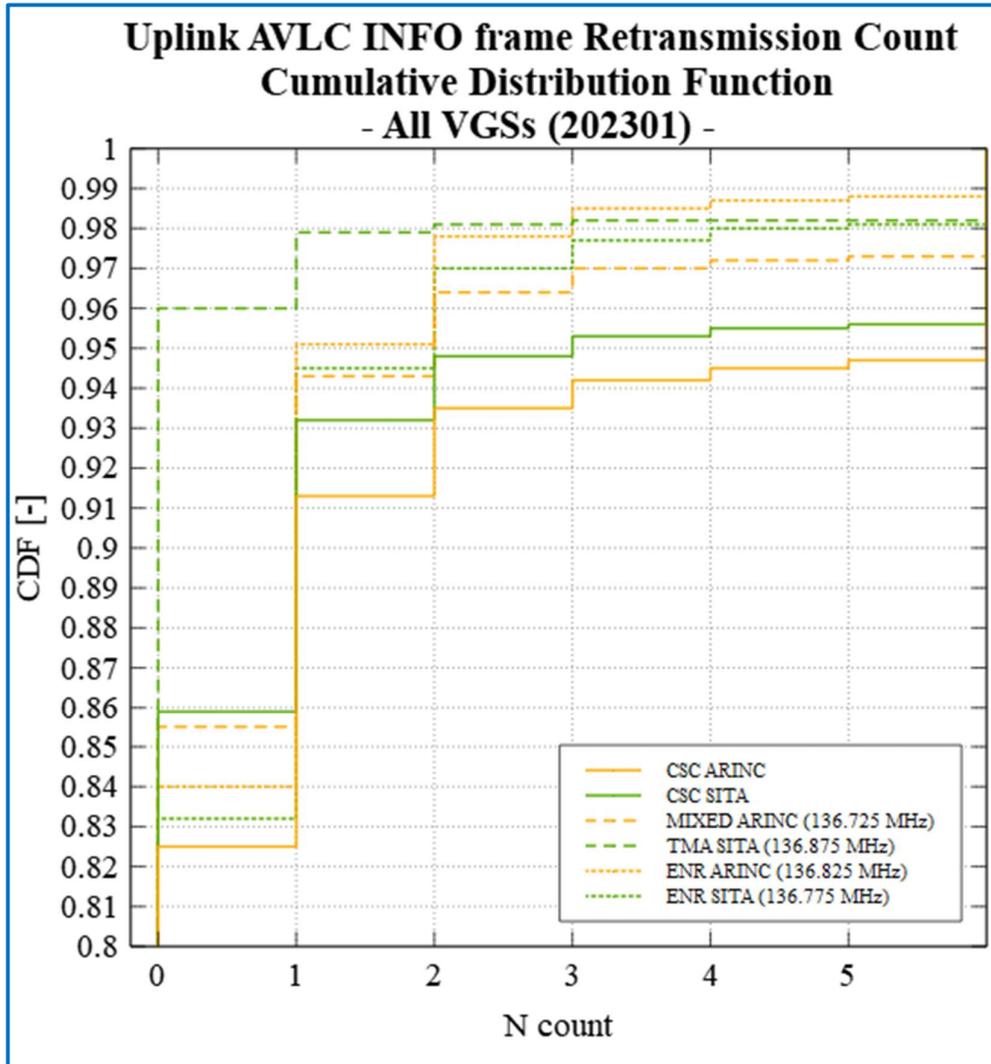


Figure 3-3: AVLC Uplink INFO frame retransmission count

AVLC Round Trip Time per frequency trend

The following set of graphs show the 95th, 99th and the 99.9th percentiles of the AVLC RTT (in seconds) of acknowledged AVLC INFO frames conveying ATN packet for each month and for each frequency with the CSC split over the two CSPs. The RTT axis has a logarithmic scale with the same range for the different frequencies. The graphs also shows the number of AVLC frames taken into account in the percentiles calculations (Frame count in linear scale) and the 95% confidence interval (gray area).

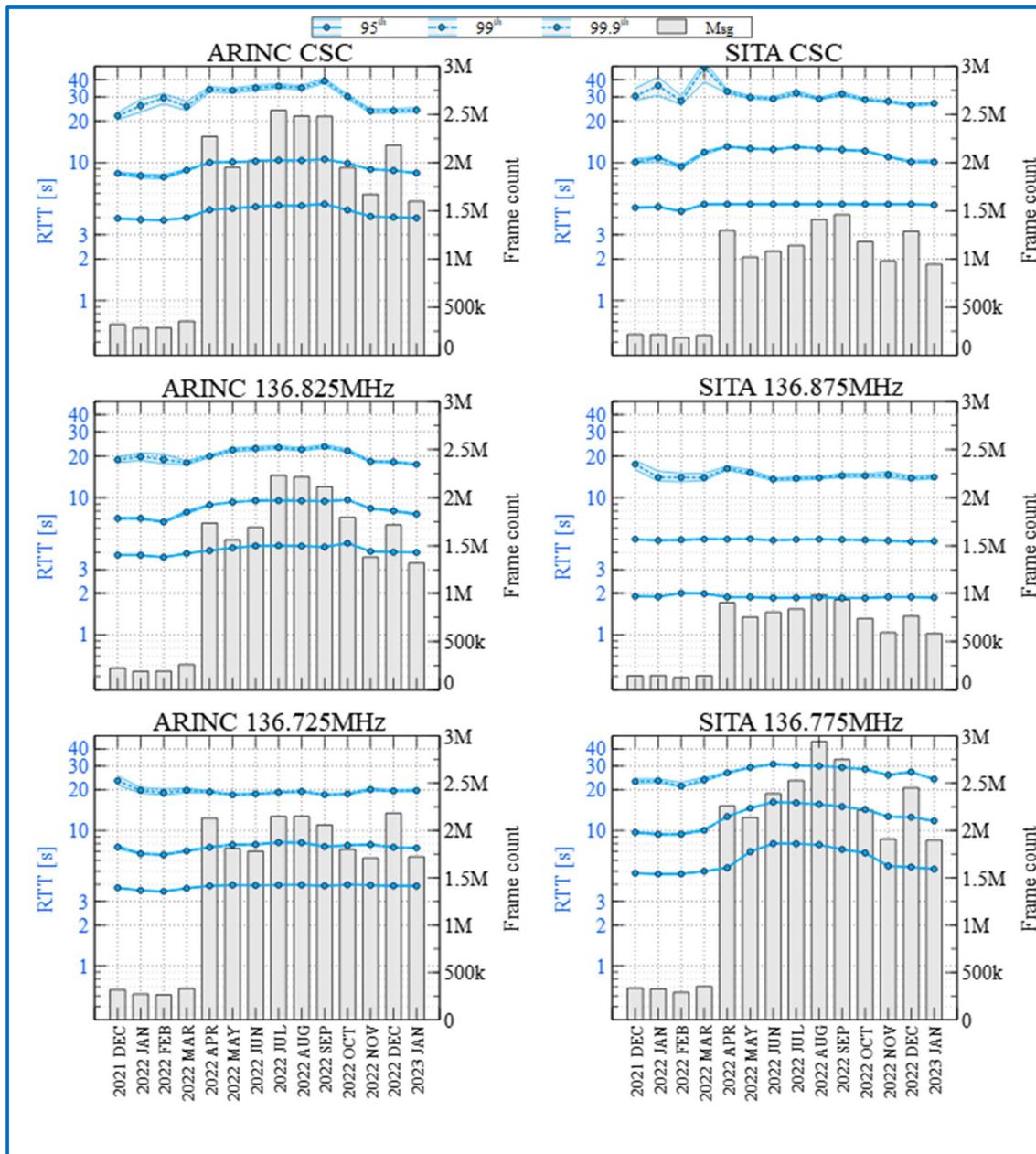


Figure 3-4: AVLC Uplink INFO Round Trip Time per Frequency

Uplink delivery success rate

The following set of graphs show the uplink delivery rate of AVLC INFO frames conveying ATN packet for each month and for each frequency with the CSC split over the two CSPs. It is the probability that an AVLC uplink INFO frame is correctly delivered to the aircraft (ACK received). The graphs also shows the number of AVLC frames taken into account in the calculations (Msg count in linear scale = AVLC frame count sent on first attempt) and the 95% confidence interval (gray area).

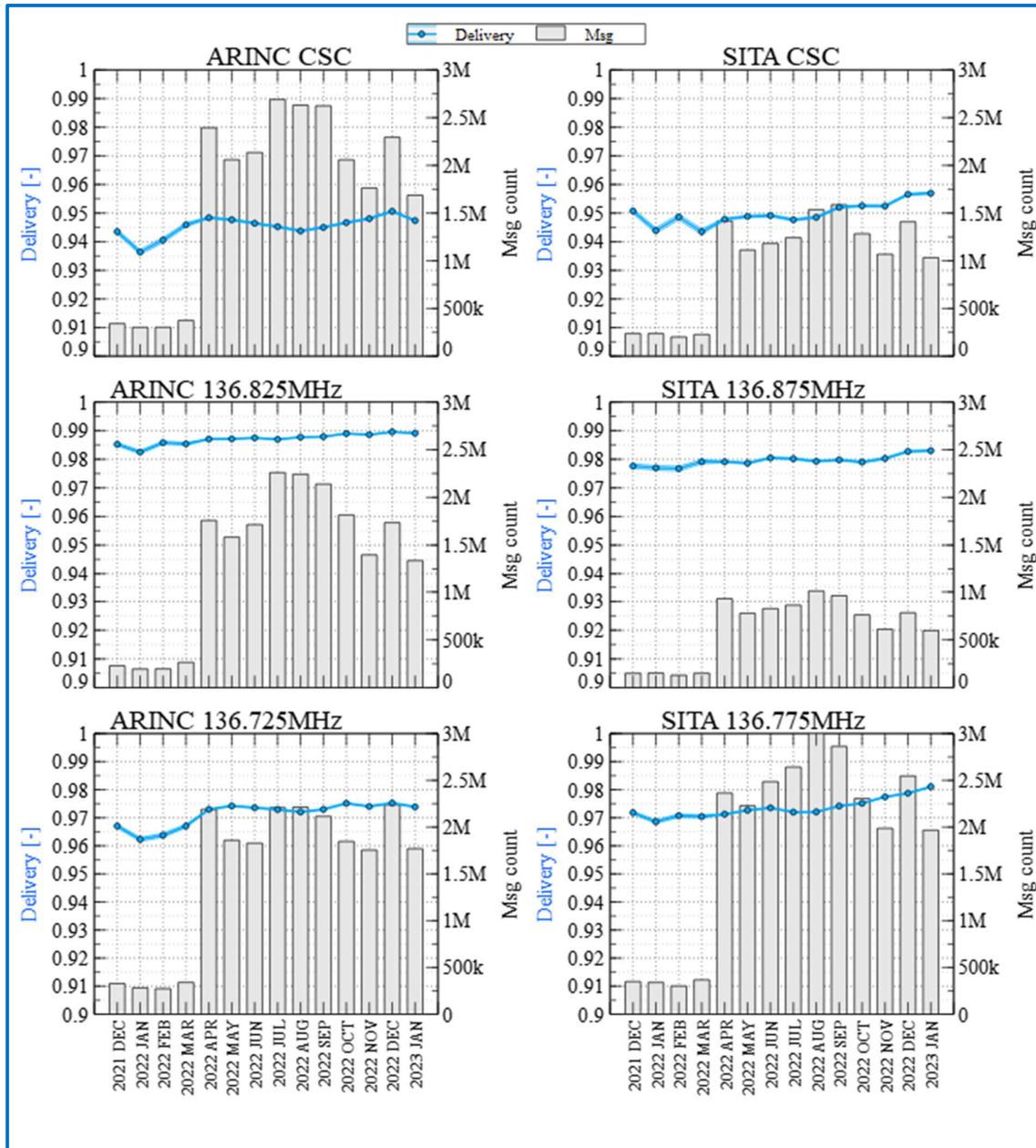


Figure 3-5: AVLC successful delivery rate per frequency

Reliability

The following set of graphs show the uplink reliability of AVLC INFO frames conveying ATN packet for each month and for each frequency with the CSC split over the two CSPs. It is the probability that an AVLC uplink INFO frame is correctly delivered to the aircraft (ACK received) within a specific duration (10 and 18 seconds). The graphs also shows the number of AVLC frames taken into account in the calculations (Msg count in linear scale = AVLC frame count sent on first attempt) and the 95% confidence interval (gray area).

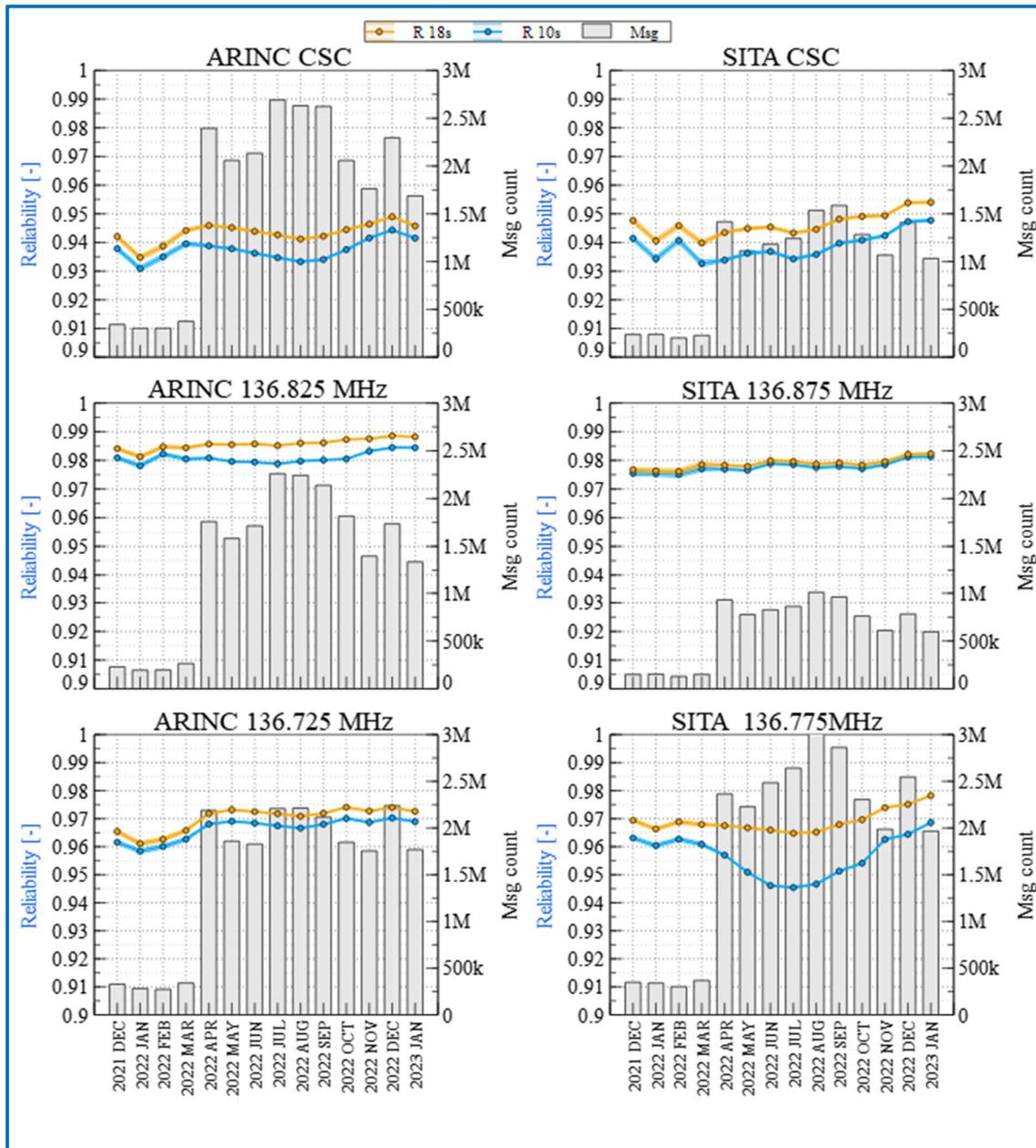


Figure 3-6: AVLC Reliability per frequency

Daily average channel load per frequency trend

The following set of graphs show the daily average channel load per AVLC payload type (ATN, AOA and AVLC protocol related frames⁶) for each month and for each frequency. An additional graph split the traffic on the CSC between ACSPs. The channel load is expressed in megabytes with the same range for the different frequencies.

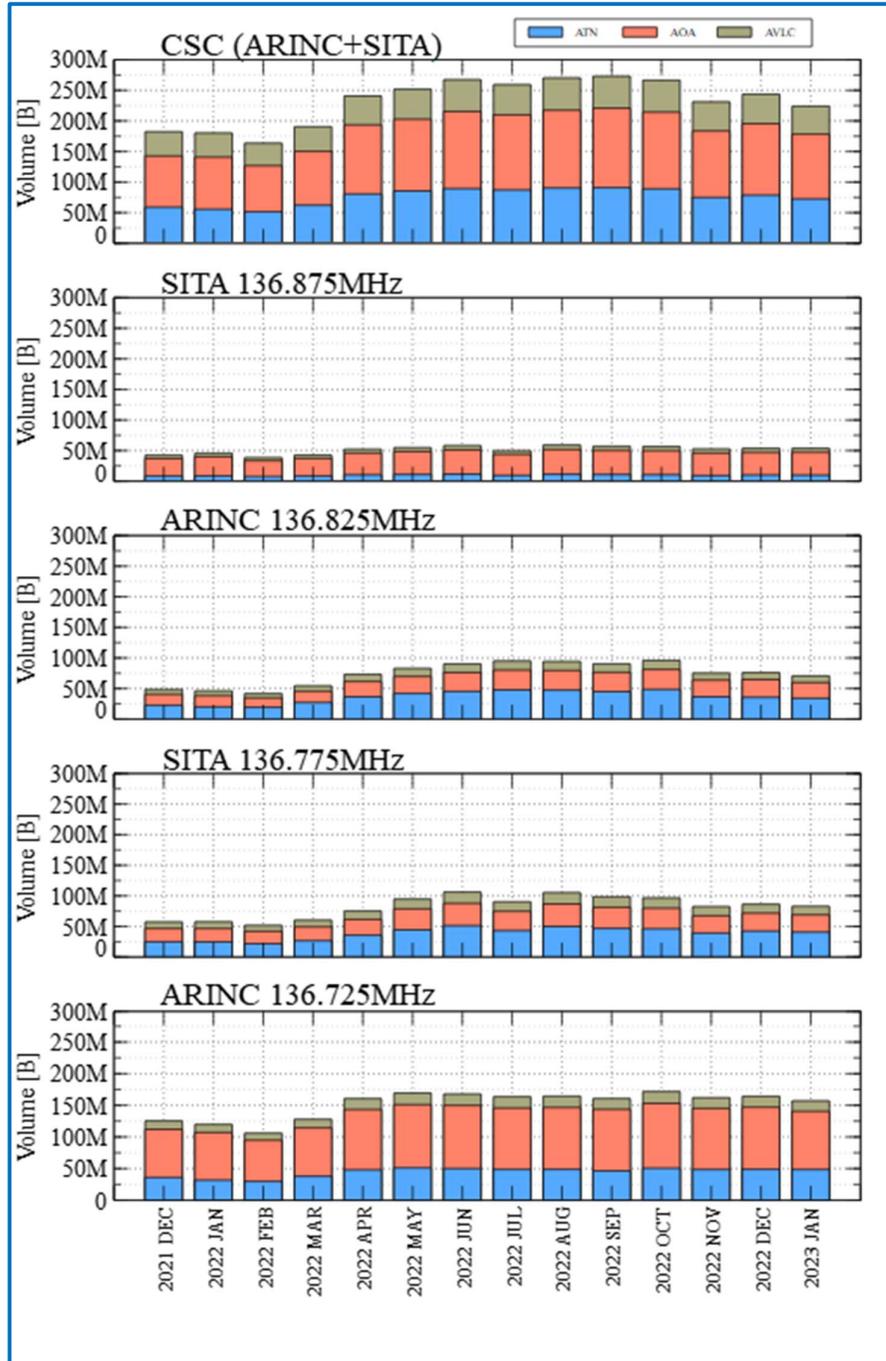


Figure 3-7: Daily average AVLC Channel load per frequency

⁶ i.e. RR, SREJ, XID, ...

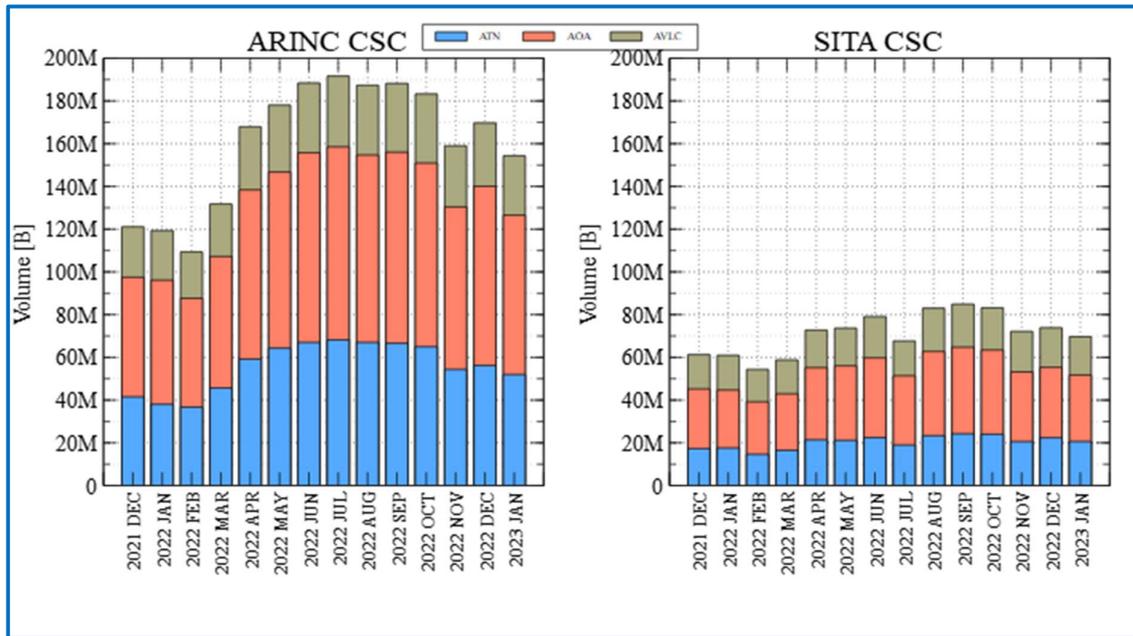


Figure 3-8: Daily average AVLC load on the CSC

Appendix A: LISAT Data Available

The table below shows the number of CPDLC flights in the LISAT database per day, per Centre for the month when this report was created. The data available for this month, computed on the 14 February 2023, may be different in subsequent months if additional data is uploaded by the ANSPs.

	EDNU	EDVY	EETT	EGPX	EGTT	EISN	ERDK	EPWV	ESNM	ESOS	EURR	EYVC	GCLC	LDZO	LECB	LECM	LFBB	LFEE	LEFF	LFMM	LFRR	LHCC	LUBB	LIMM	LIPP	LIRR	LJLA	LKAA	LOVV	LPPC	LRBB	LSAG	LSAZ
1 January 2023	1 882	2 156		529	2 769	154	655	736	604	278	180	127	68	538	914	1 888	1 146	1 100	974	1 089	1 379	865	108	124	89	183	318	500	1 039	863	673	672	628
2 January 2023	2 127	2 286	101	597	3 172	193	751	787	654	355	175	130	140	585	1 034	1 979	1 156	1 092	1 099	1 133	1 519	908	137	151	127	230	321	520	1 176	945	702	652	644
3 January 2023	1 873	2 148	86	538	2 849	176	663	697	582	275	150	120	112	591	945	1 907	1 071	979	974	984	1 476	894	63	141	90	216	314	529	1 160	783	701	529	535
4 January 2023	1 857	2 063	112	563	2 827	154	637	683	593	278	160	109	91	581	897	1 877	1 089		979		1 394	904	82	143	85	157	337	479	1 160	893	687	512	538
5 January 2023	1 886	2 111	82	518	2 901	180	633	686	619	275	137	97	131	583	972	1 941	1 102	1 034		1 444	935	126	131	95	193	316	479	1 144	951	697	585	587	
6 January 2023	2 113	2 300	106	492	3 044	199	669	794	591	281	168	129	116	640	1 055	2 070	1 188	1 049		1 569	927	139	138	124	159	352	565	1 247	993	706	660	659	
7 January 2023	2 070	2 226	126	604	3 000	191	632	766	598	243	180	122	152	600	1 011	2 295	1 138	1 065		1 681	969	98	148	96	185	330	509	1 214	1 119	744	682	663	
8 January 2023	2 003	2 340	102	627	2 976	137	722	770	653	341	171	123	122	634	1 050	2 107	1 204	1 038		1 607	941	114	136	92	216	350	525	1 277	975	703	679	639	
9 January 2023	1 878	2 068	83	606	2 824	127	688	714	614	295	144	104	84	504	968	1 893	971	947		1 343	875	107	154	106	181	292	479	1 122	886	650	553	510	
10 January 2023	1 483	1 638	85	476	2 321	162	537	570	483	233	145	91	104	466	748	1 585	840	801		1 086	805	107	107	86	185	276	395	970	793	640	386	401	
11 January 2023	1 581	1 712	113	615	2 291	99	545	594	490	245	153	80	113	444	753	1 482	803	767		1 018	815	87	96	117	156	275	405	1 006	744	663	375	383	
12 January 2023	1 625	1 851	85	534	2 452	122	621	650	582	270	151	105	90	435	766	1 596	907	854		1 148	839	105	120	28	168	256	414	971	794	668	454	444	
13 January 2023	1 995	2 157	104	599	2 774	140	687	762	623	318	181	111	89	573	901	1 844	1 042	1 005		1 341	928	90	148	22	180	310	528	1 168	882	686	559	492	
14 January 2023	1 870	1 973	114	588	2 793	161	620	698	529	208	165	106	130	575	883	2 072	999	959		1 481	880	79	124	15	166	324	513	1 075	1 024	716	571	557	
15 January 2023	1 959	2 181	104	686	2 929	169	633	720	595	313	179	125	129	590	949	1 956	1 049	1 011		1 463	905	143	159	38	203	321	516	1 168	970	680	634	540	
16 January 2023	1 855	2 042	89	566	2 729	147	663	683	620	296	159	93	69	474	860	1 755	908	926		1 224	859	104	129	93	175	270	500	1 061	828	669	512	444	
17 January 2023	1 477	1 585	88	389	2 240	208	509	550	452	202	130	106	82	410	671	1 427	721	749		1 010	779	48	95	66	153	243	380	944	765	657	365	332	
18 January 2023	1 451	1 541	105	417	2 008	161	534	534	515	239	156	95	89	388	529	1 120	134	135		179	733			96	63	239	394	917	660	605	263	270	
19 January 2023	1 698	1 810	86	460	2 367	214	583	630	532	291	154	113	73	407	690	1 366	476	453		568	822	86	125	92	239	465	988	730	669	408	391		
20 January 2023	1 918	2 089	103	516	2 788	213	647	748	595	284	166	114	75	525	852	1 798	969	998		1 275	858	127	163	99	321	553	1 118	854	670	570	500		
21 January 2023	1 815	1 941	99	562	2 712	216	576	719	519	200	147	121	135	486	899	1 982	878	972		1 450	887	90	124	100	280	574	1 066	1 057	700	561	498		
22 January 2023	1 811	2 081	85	535	2 736	176	649	674	591	281	154	112	112	557	925	1 876	1 058	945		1 360	916	79	137	106	305	599	1 093	892	697	582	600		
23 January 2023	1 749	1 951	81	573	2 580	217	646	682	581	279	135	97	93	495	881	1 648	941	926		1 138	825	92	147	14	286	483	1 056	780	665	458	485		
24 January 2023	1 431	1 529	90	480	2 141	192	485	557	422	209	141	106	83	415	708	1 414	765	747		901	739	65	111	71	223	405	903	715	650	348	345		
25 January 2023	1 365	1 625	93	470	2 068	187	528	507	471	236	128	79	79	406	667	1 344	784	763		965	700	71	101		255	386	836	687	585	334	353		
26 January 2023	1 651	1 829	88	587	2 386	203	604	599	548	275	133	86	76	407	792	1 560	859	844		1 112	814	77	102		222	439	961	801	647	422	447		
27 January 2023	1 865	2 051	88	499	2 700	237	664	702	592	327	156	103	98	513	929	1 810	1 012	973		1 267	846	80	134		272	514	1 082	878	640	518	552		
28 January 2023	1 836	1 969	113	569	2 708	232	586	688	517	219	151	113	134	541	887	1 948		936		1 412	886	70	161		294	499	1 126	1 104	723	549	579		
29 January 2023	1 844	2 125	101	677	2 785	160	684	729	581	304	174	115	145	606	941	1 887	1 120	1 019		1 423	883	97	165		319	497	1 101	933	681	602	592		
30 January 2023	1 670	2 003		552	2 664	174	644	663	596	299	155	106	94	482	885	1 717	988	931		1 193	817	147	138		272	486	1 007	810	670	479	479		
31 January 2023	1 488	1 663		470	2 235		535	551	447	226	134	99	80	199	725	1 446	747	720		864	715	102	117		244	414	898	771	601	374	390		

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