



Data link Network Operational Status Report

April 2023 – Developed 12/05/2023

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 April 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 this 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.
- For April 2023 due to the technical reasons, this report does not include the data for the Overall RCTP Technical Continuity
- For the month of April there are partial data for LFMM and LPPC (as shown in Appendix A).
- 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 LPPC (Portugal).
- 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 with a status as of the end of the reporting month. The top map shows the operational status of each centre (<N-4>). The map below shows which centres are providing LISAT data to NM. The table on the right shows per centre for the reporting 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 (based on the available LISAT data).

ANSPs with service limitations and operational restrictions

The table below identifies the current service limitations and operational restrictions. There are no changes in this table compared to previous reports.

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). <u>Datalink services are provided only to Logon-List a/c</u>
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

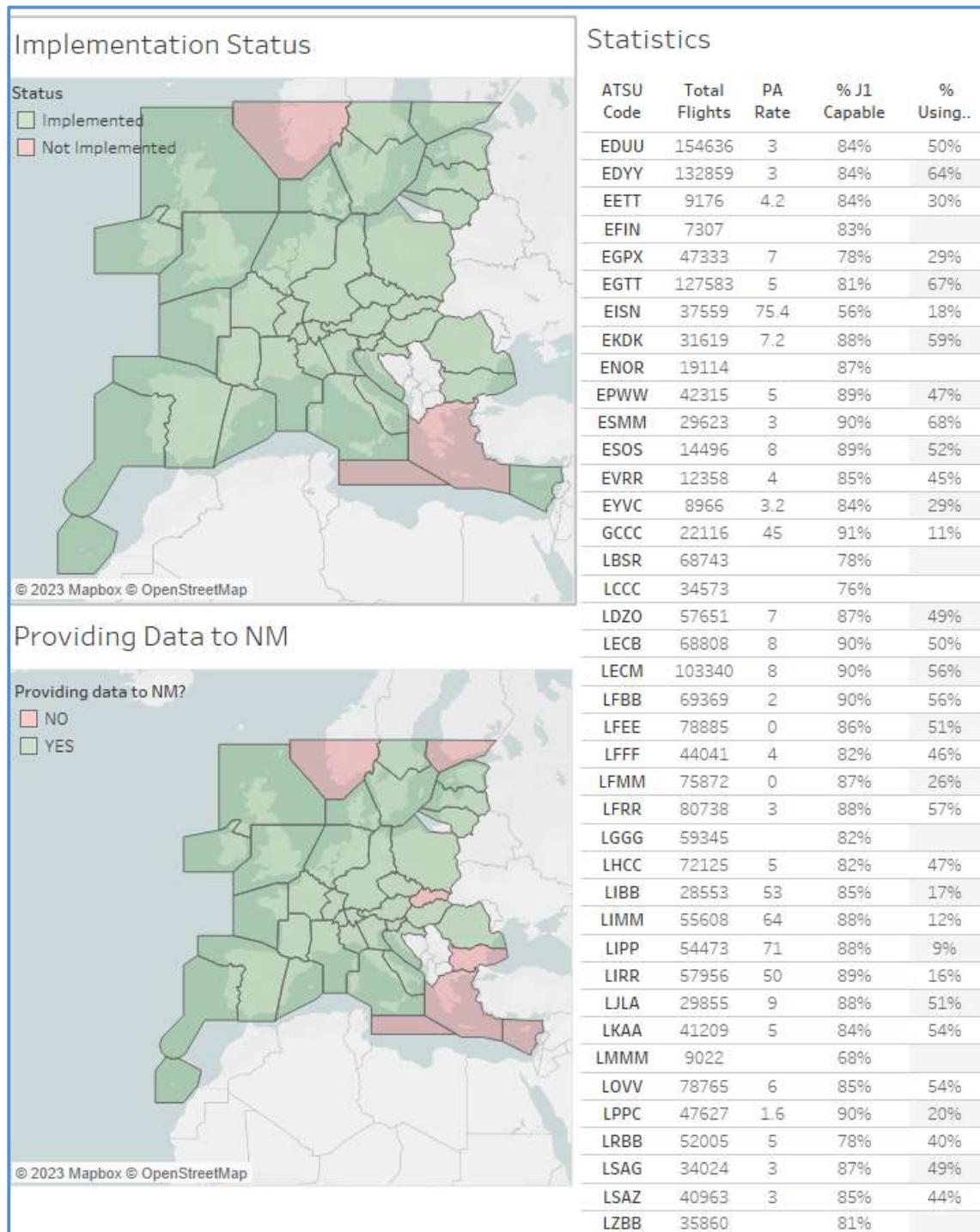


Figure 1-1: Current operational status of data link over the ATN

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, 83,8% of flights indicated the capability to perform CPDLC over ATN/VDL Mode 2. 13% (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).

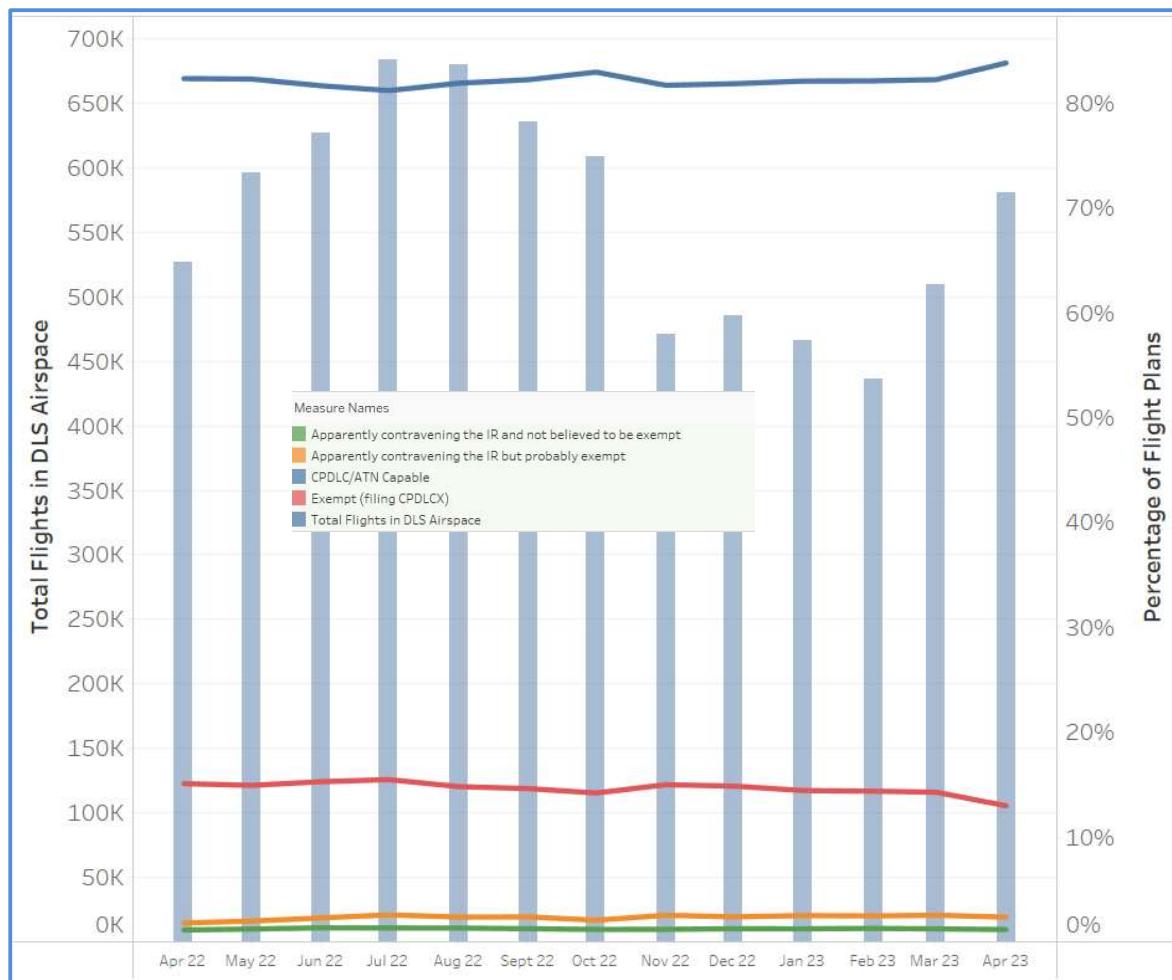


Figure 1-2: Proportion of flights capable of using CPDLC over ATN/ VDL Mode 2

¹ EHAAFIR, LOVVFIR, LECBUIR, LIBUIR, EBURUIR, GCCCUIRN, GCCCUIRS, LFFFUIR, EDVVUIR, LPPCFIR, EGTTUIR, LECMUIR, LIMMUIR, EDUUIIR, LIRRUIR, EGDXUIR, EISNUIR, LZBBFIR, LRBBFIR, LHCCFIR, EKDKFIR, LJLAFIR, LCCCFIR, LKAAFIR, LBSRFIR, EPWWFIR, EFINFIR, LGGGUIR, LMMMUIR, EVRRUIR, ESAUAR, EETTUIR, EYVLUIR.

2. Technical Performance

Overall Monthly Provider Abort Rate

Figure 2-1 below shows the monthly PA rate <0-23> aggregated for all ANSPs providing LISAT data to NM. 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 5.5 PAs per 100 hours.

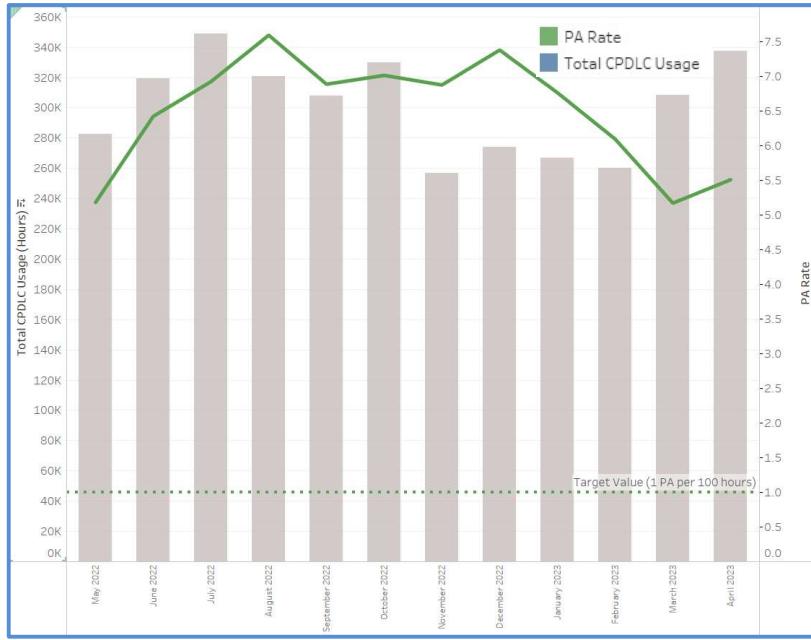


Figure 2-1: PA rate

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.

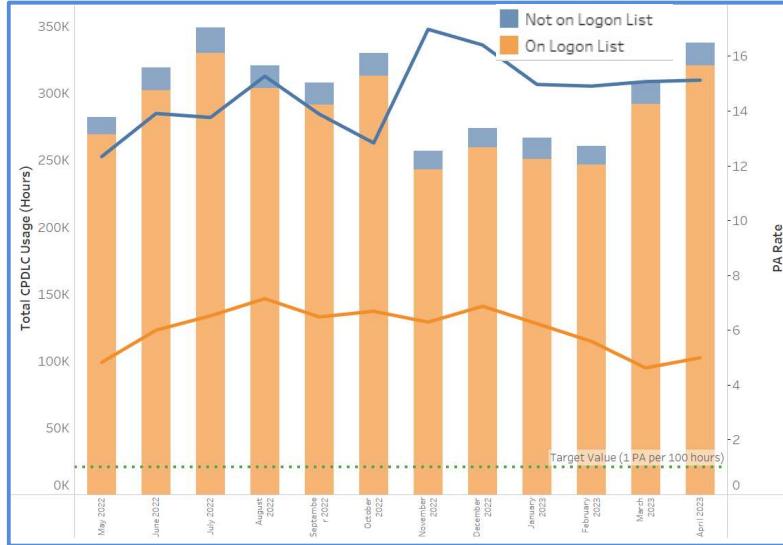


Figure 2-2: Logon Listed Aircraft PA rate

Monthly PA rate per Centre

The PA rate for each of the centers providing data to NM is shown in the table in Figure 2-3 below for the last 12 month period for the months LISAT data are available.

Note: The received LISAT data for LFEE and LFMM do not contain PA information and the 0 PA rate indicated below is not correct, since the migration of these two centers in the new system. DSNA is working to address this issue.

Atsu Code	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023	April 2023
EDUU	2,5	2,6	2,5	2,0	2,4	1,9	1,4	1,6	1,1	1,5	2,0	2,5
EDYY	3,5	3,7	3,0	2,7	3,2	2,8	2,4	2,7	1,9	2,1	2,1	3,0
EETT									2,5	0,8		4,4
EGPX	6,0	6,3	5,7	7,0	7,1	6,0	5,5	5,8	4,9	5,1	5,7	7,0
EGTT	3,8	3,7	4,0	4,1	4,9	3,7	3,4	4,3	3,6	3,7	3,9	4,8
EISN								41,2	55,2	51,8	57,2	73,5
EKDK	9,2	7,0	6,3	6,6	6,6	7,8	7,3	7,7	8,4	8,6	9,7	8,4
EPWW	2,6	4,8	3,6	2,6	3,1	2,7	3,6	3,3	5,7	3,2	4,0	4,1
ESMM	2,9	3,3	2,8	2,4	2,2	2,8	2,5	2,7	2,3	2,8	3,1	2,6
ESOS	6,5	4,5	3,8	4,1	5,9	8,9	4,9	5,2	3,6	4,2	4,5	4,2
EVRR	2,9	3,6	2,8	4,5	3,3	3,5	3,5	5,3	3,2	3,0	3,2	4,5
EYVC	2,9	1,9	3,4	1,8	2,8	2,2	3,3	2,3	2,4	1,5	1,6	3,0
GCCC	40,8	49,1	45,1	47,6	44,0	18,2	40,3	44,9	48,1	49,0	46,7	43,6
LDZO	9,1	11,8	19,3	12,2	11,4	10,6	7,3	6,5	5,2	5,3	5,7	7,4
LECB	4,8	4,5	4,9	7,8	10,7	3,8	3,5	2,6	2,7	2,8	2,7	3,0
LECM	4,6	4,9	4,9	5,3	5,4	4,8	7,3	6,5	4,9	6,6	5,9	5,6
LFBB	1,3	1,4	1,6	2,8	3,7	1,4	1,5	1,9	1,2	1,3	1,5	2,1
LFEE	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
LFFF	5,0	3,5	2,9	4,2	4,3	4,7	4,5	4,7	4,2	4,4	4,0	6,2
LFMM	7,4	8,3	13,1	10,3	7,5	7,1	6,3	1,0	0,0	0,0	0,0	0,0
LFRR	1,6	1,5	1,4	1,7	1,4	1,6	1,7	1,9	1,9	1,8	2,0	2,7
LHCC	5,9	4,8	4,9	4,0	4,2	3,2	3,7	3,8	4,6	4,0	4,2	4,7
LIBB	43,9	82,1	143,1	167,5	156,3	122,3	76,9	74,1	65,1	49,2	31,6	32,0
LIMM	43,9	86,8	158,4	216,9	181,3	319,8	204,1	237,0	234,8	105,8	18,1	63,1
LIPP	61,6	155,7	95,3	425,6	357,4	518,8	311,4	429,0	442,1	270,1	76,6	72,2
LIRR	24,8	53,2	152,0	61,2	52,3	66,0	51,3		56,4	29,5	29,1	40,5
LJLA	6,6	7,7	7,6	8,6	7,9	9,8	4,2	5,2	5,2	5,1	5,4	8,8
LKAA	5,7	5,9	5,2	4,2	3,8	4,1	4,2	4,4	5,0	4,6	5,4	5,0
LOVV	6,1	6,1	7,0	6,1	5,3	5,2	4,3	4,2	4,3	4,5	6,7	6,2
LPPC					25,1	33,8	50,6	31,9	24,7	14,8		2,0
LRBB	3,1	3,7	4,1	3,9	4,5	3,1	3,7	3,4	3,5	3,8	3,6	3,8
LSAG	4,6	6,1	16,2	5,0	4,6	4,4	4,7	2,3	3,4	3,2	3,2	3,1
LSAZ	3,1	5,8	15,5	4,2	4,1	4,5	3,2	2,8	2,1	2,2	2,6	3,2

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 Operator (from FL)	Total CPDLC Usage	Total Flights	PA Rate Top30 AOs
RYR	53332,58	43.515	4,8
EZY	18224,93	15.323	3,1
WZZ	17494,25	14.059	3,9
BAW	11830,87	9.625	6,3
DLH	11677,31	12.722	2,8
EJU	10593,89	11.896	5,0
THY	10079,87	6.705	4,7
EXS	9627,21	4.957	5,9
TAP	8082,01	7.056	11,7
EWG	8052,33	7.043	3,1
SAS	8022,77	7.787	3,6
AFR	7923,39	9.879	4,4
VLG	7299,67	9.018	3,8
FIN	5220,68	2.920	5,1
KLM	5210,84	5.859	3,8
PGT	4947,97	3.156	1,8
NOZ	4187,61	2.821	3,1
NSZ	4001,88	2.551	2,8
SWR	3998,28	4.535	4,5
TRA	3691,43	2.532	1,8
AUA	3670,54	4.264	2,7
IBE	3590,91	3.867	2,7
EIN	3464,49	3.636	3,4
TOM	3252,85	1.961	5,9
EZS	3003,36	3.401	3,6
QTR	2990,87	1.898	5,3
BEL	2965,41	3.413	2,1
TVF	2045,00	1.837	2,3
IBS	1620,45	2.022	3,8
LOT	1581,07	2.005	8,3

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	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sept 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23
Garmin	GDR66	Garmin	GIA64E	9.01	9.94	13.45	17.18	14.44	15.77	8.58	6.03	6.94	3.32	2.76	8.25	7.96
			GIA63W	8.36	11.61	12.19	18.89	14.65	12.27	8.57	7.22	9.58	7.64	8.83	9.58	13.58
Honeywell	EPIC VOR	Honeywell	EPIC CMF	6.67	10.58	11.45	12.27	11.04	9.38	7.23	4.91	4.47	4.88	5.18	4.79	6.86
		Honeywell	EPIC CMF	3.80	7.07	6.82	6.69	12.76	10.49	5.39	10.75	5.10	4.74	7.79	1.80	7.41
	RTA44D	Airbus	FANS-B+	3.20	4.49	6.96	7.95	8.16	7.25	8.14	5.27	6.17	5.25	4.10	3.27	4.23
		Honeywell	Mk2+	2.65	1.76	2.58	2.82	1.65	1.65	1.46	2.67	5.03	3.10	3.25	2.33	2.81
		Rockwell Collins	CMU900	5.34	6.46	9.08	13.12	7.39	7.10	3.39	4.75	5.67	4.04	3.59	4.72	4.08
RTA50D	Airbus	FANS-C	2.74	5.59	6.05	7.45	7.67	6.50	7.04	7.49	8.85	7.18	5.69	5.04	4.15	
		FANS-B+	3.06	4.33	6.51	7.63	8.78	6.69	7.68	6.09	6.66	5.54	4.59	3.67	3.79	
		FANS-A+B							2.14	0.83	0.00	5.37	3.36	9.38	19.73	
	Honeywell	Mk2+	4.50	4.57	4.61	4.95	4.73	5.29	6.00	6.24	6.29	6.02	5.98	4.91	5.81	
		777AIMS2	40.11	38.44	35.18	32.04	16.89	31.69	17.71	23.65	18.62	30.52	65.61	44.32	44.11	
Rockwell Collins	920	CMU900	2.24	8.48	9.24	30.76	3.94									
		Airbus	FANS-B+	3.36	5.36	9.44	9.07	11.51	8.84	8.29	6.78	7.98	7.82	7.19	5.26	5.12
		Honeywell	Mk2+	0.95	2.91	4.57	3.73	9.84	10.41	9.69	5.83	6.48	9.30	7.97	1.16	1.74
	2100	Rockwell Collins	CMU900	4.41	5.70	11.72	11.10	7.28	7.53	16.07	3.13	4.20	7.34	7.47	5.02	6.15
		Airbus	FANS-C	5.25	4.19	3.77	6.29	2.40	2.46	3.11	4.79	7.89	5.55	4.93	4.91	5.29
4000	Rockwell Collins	FANS-B+	2.81	4.79	6.59	7.26	9.60	7.54	8.01	6.34	6.21	5.47	4.36	2.89	3.68	
		FANS-A+B	3.61	6.14	6.93	5.82	7.45	6.95	6.10	6.36	5.08	4.32	4.60	4.13	3.86	
		Honeywell	Mk2+	2.79	1.87	2.25	2.83	1.57	1.48	1.26	1.91	2.20	2.26	2.07	1.78	2.72
	2200	787 CMF	5.13	5.34	5.67	5.89	5.44	5.83	4.52	5.03	6.09	9.50	9.48	10.24	9.88	
		Rockwell Collins	CMU900	4.39	3.93	4.02	4.04	3.82	4.05	3.93	7.10	8.44	7.20	5.67	4.83	4.51
Thales	Airbus	FANS-C	2.81	3.43	4.51	4.29	5.64	5.74	6.54	12.75	16.58	14.33	10.01	7.77	6.40	
		FANS-B+	3.87	4.55	6.01	5.32	10.19	9.23	7.70	5.98	7.49	5.43	4.84	3.24	2.80	
		FANS-A+B	2.84	3.75	3.60	3.92	4.72	5.25	3.99	4.22	5.07	5.09	4.97	3.88	3.62	
	Spectralux	RIU-4010	6.82	11.31	10.61	12.73	9.67	10.67	10.67	10.73	10.70	9.18	10.72	10.64	10.84	
		RIU-4000	15.82	7.79	12.02	13.72	14.83	7.08	11.03	9.64	5.54	6.13	7.02	8.20	5.43	
UASC	UL801	CMU900	8.12	10.50	9.13	10.45	10.57	10.38	8.54	8.00	5.65	7.61	2.90	5.69	4.40	
		CMU4000	4.97	5.28	6.49	10.26	5.65	4.72	5.99	3.99	3.40	4.32	3.47	4.28	5.27	
		Dlink+	9.58	11.77	9.80	9.05	11.13	11.45	12.42	17.52	19.56	20.97	18.08	15.41	12.25	
Thales	EV750	Airbus	4.64	7.23	10.59	8.37	10.02	9.79	9.17	6.80	7.50	6.65	6.47	5.23	6.06	
		FANS-A+B														
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

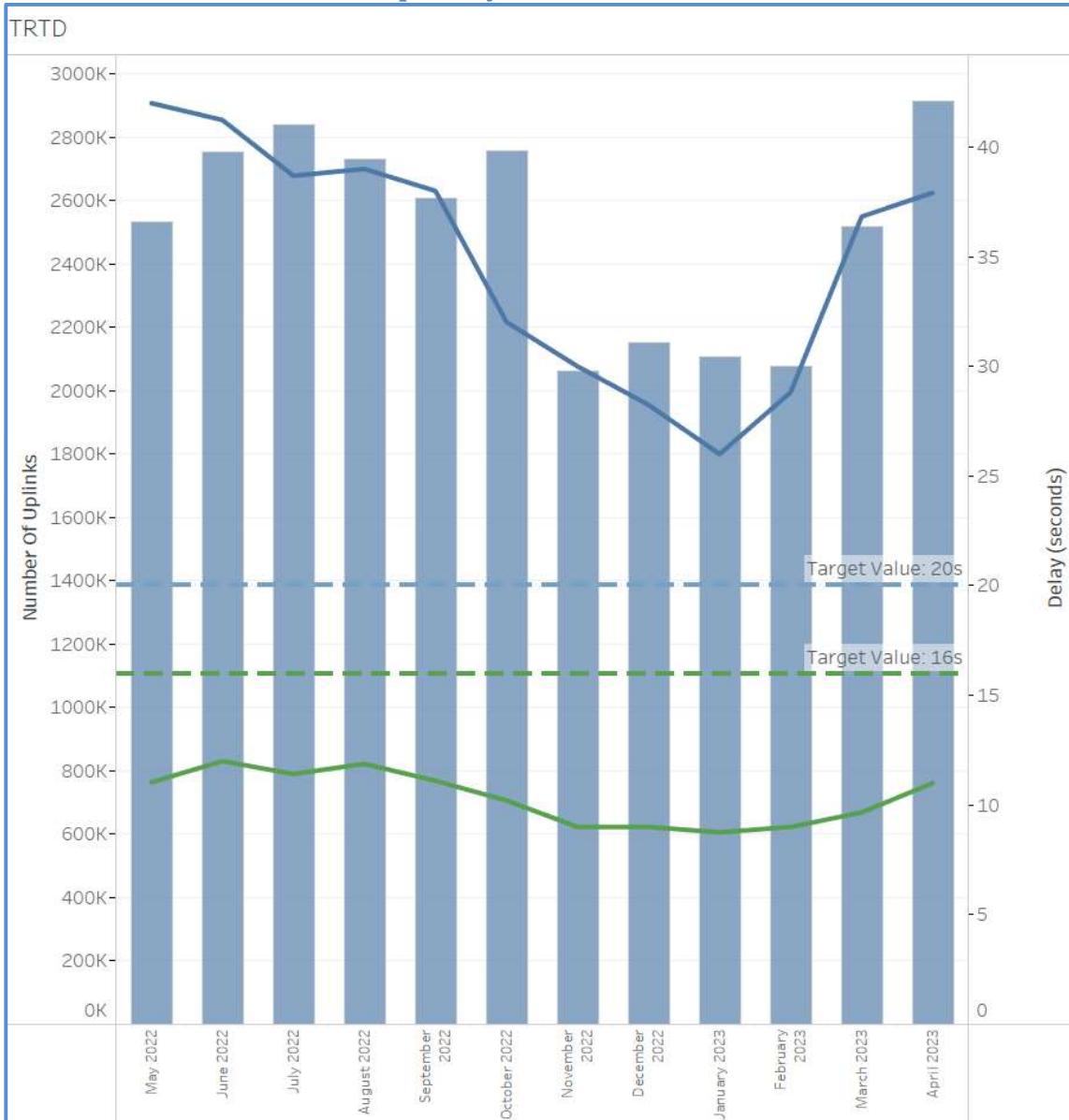


Figure 2-6 below shows the 95th and 99th percentiles of the technical round trip delay <0-2> and <0-3>. It represents the delay between the time when a message is uplinked and the time when the ground system receives the corresponding application level acknowledgement (aggregated for all systems providing 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.

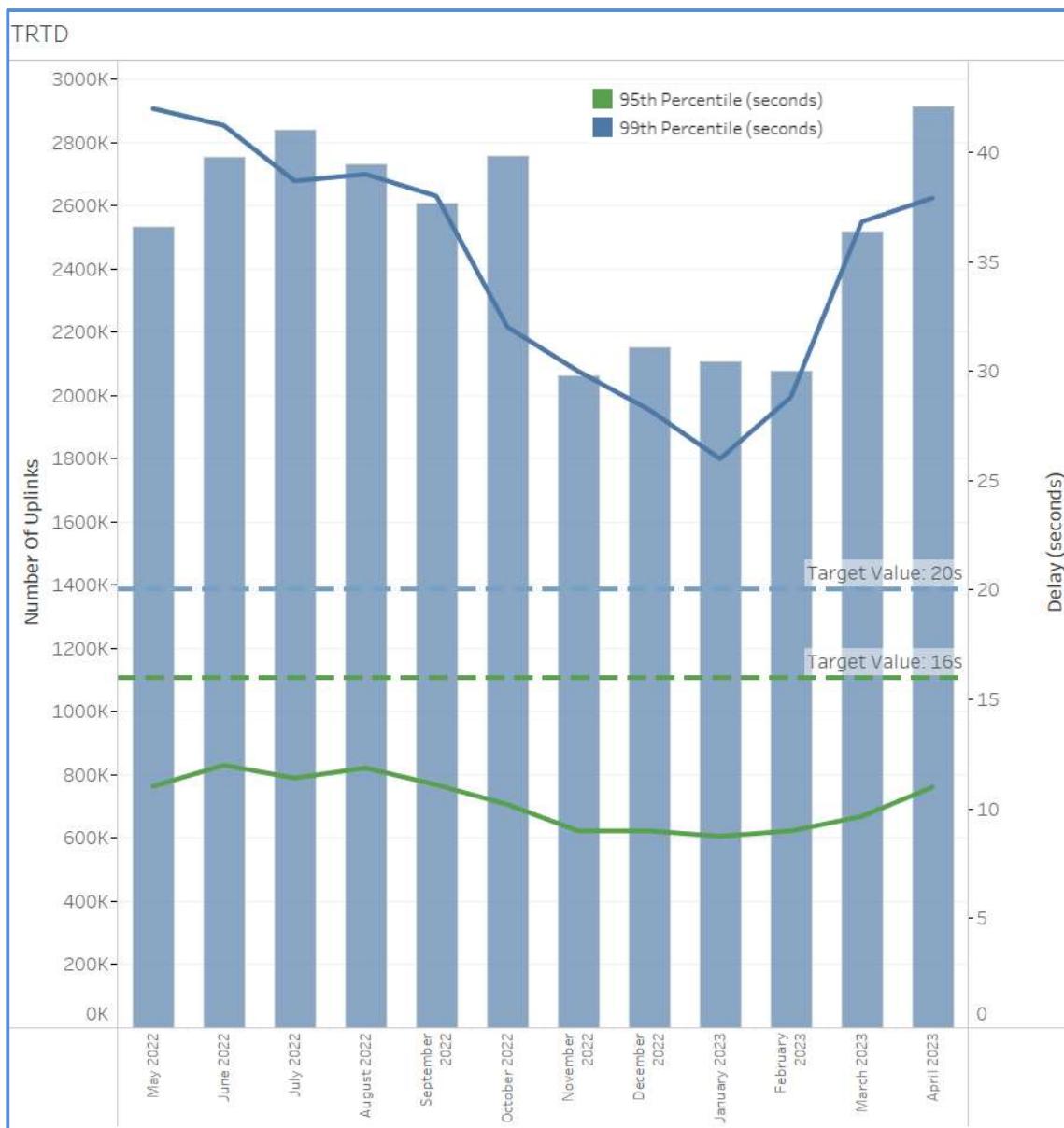


Figure 2-6: Technical Round Trip Delay

Monthly 95th percentile of TRTD per Centre

TRTD 95th												
Atsu Code	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023	April 2023
EDUU	10,5	11,2	11,3	11,1	10,8	10,2	8,3	8,4	8,1	8,4	9,6	11,1
EDYY	9,9	10,3	10,2	10,1	10,2	9,9	8,2	8,3	7,9	8,3	8,8	10,2
EETT									6,0	6,0		6,0
EGPX	9,7	10,0	10,0	9,8	10,0	9,1	7,9	8,1	7,7	8,0	8,2	8,9
EGTT	9,8	9,8	9,7	9,6	9,9	9,4	8,1	8,2	7,9	8,5	8,7	9,8
EISN									38,0	19,6	20,7	18,2
EKDK	9,0	10,0	10,0	10,0	10,0	10,0	9,0	9,0	9,0	8,0	9,0	10,0
EPWW	6,4	6,8	6,8	6,8	7,2	6,7	6,6	6,4	6,6	6,4	6,5	6,9
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	7,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
EVRR	10,0	9,0	9,0	9,0	8,0	8,0	7,0	7,0	7,0	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	5,0	5,0
GCCC	38,5	37,6	22,8	31,1	22,4	7,9	12,2	14,2	14,2	11,6	11,6	11,3
LDZO	13,0	13,0	13,0	14,0	14,0	12,0	11,0	10,0	10,0	10,0	11,0	13,2
LECB	8,5	9,2	9,4	9,5	9,2	8,3	7,8	7,7	7,8	8,1	8,0	8,6
LECM	7,8	8,4	8,3	8,4	8,2	8,2	8,8	8,5	8,5	9,0	8,6	9,0
LFBB	9,0	8,0	8,0	8,0	8,0	7,0	7,0	7,0	6,0	7,0	7,0	8,0
LFEE	9,0	10,0	10,0	10,0	10,0	9,0	8,0	8,0	8,0	8,0	8,0	10,0
LFFF	13,0	14,0	15,0	15,0	15,0	14,0	12,0	12,0	11,0	11,0	12,0	15,0
LFMM	11,0	10,0	11,0	11,0	10,0	9,0	8,0	6,0	6,0	6,0	6,0	8,0
LFRR	9,0	9,0	9,0	9,0	9,0	8,0	7,0	8,0	7,0	8,0	8,0	9,0
LHCC	9,0	10,0	10,0	11,0	10,0	9,0	8,0	9,0	9,0	8,0	9,0	10,0
LIBB	18,0	24,4	17,9	24,6	29,8	23,7	14,9	14,0	13,6	13,6	14,3	18,7
LIMM	70,6	78,7	87,6	79,6	54,6	73,5	41,6	37,6	29,8	37,7	82,5	85,3
LIPP	69,6	83,9	85,4	67,5	49,7	59,0	40,9	37,7	36,8	84,9	86,5	73,8
LIRR	29,9	37,5	39,5	45,7	37,6	24,5	15,7		14,6	15,5	19,0	30,2
LJLA	15,8	18,2	18,9	18,9	17,9	16,3	13,4	12,9	12,8	13,4	14,5	17,0
LKAA	11,0	11,7	12,0	11,0	11,0	11,0	10,0	10,0	9,0	9,0	10,0	10,0
LOVV	13,0	13,0	13,0	13,0	13,0	12,0	10,0	10,0	10,0	10,0	10,0	12,0
LPPC						33,5	37,9	56,4	33,6	19,2	36,9	19,8
LRBB	7,3	7,9	8,2	8,3	8,4	7,5	7,3	7,1	7,6	7,3	7,5	8,0
LSAG	13,0	13,8	13,8	15,1	14,3	11,9	10,2	10,5	10,5	10,5	11,1	14,1
LSAZ	14,0	16,0	16,1	16,7	16,1	14,4	11,7	11,6	11,0	12,0	12,2	15,1

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

Monthly 99th percentile of TRTD per Centre

Atsu Code	May 2022	June 2022	July 2022	August 2022	September 2022	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023	April 2023
EDUU	42,0	45,4	42,2	40,5	39,6	27,7	21,3	21,7	21,5	21,6	27,8	43,8
EDYY	31,3	30,1	27,1	27,1	27,2	25,5	21,5	21,8	20,9	21,2	22,0	27,0
EETT									14,0	17,0	14,0	14,0
EGPX	38,5	38,0	29,1	37,5	35,5	23,3	19,6	20,1	18,5	19,8	20,7	21,2
EGTT	24,6	24,1	23,2	23,3	24,8	22,6	21,7	21,9	21,5	21,9	22,1	23,8
EISN									184,7	152,4	108,6	96,0
EKDK	21,0	24,0	21,0	21,0	21,0	20,0	18,0	19,0	18,0	18,0	18,0	21,0
EPWW	14,0	21,6	21,9	21,3	22,0	16,0	21,1	16,6	21,4	15,2	17,9	21,1
ESMM	13,0	14,0	13,0	14,0	14,0	13,0	13,0	13,0	13,0	12,0	13,0	13,0
ESOS	14,0	15,0	13,0	15,0	14,0	13,0	12,0	13,0	12,0	12,0	12,0	13,0
EVRR	39,0	38,0	31,0	37,0	36,1	17,0	16,0	15,0	16,0	16,0	14,0	15,0
EYVC	16,7	14,0	17,2	11,9	12,0	9,0	9,0	10,0	9,0	10,0	9,0	9,0
GCCC	107,2	86,5	64,1	91,7	89,2	35,5	88,0	107,6	65,9	87,1	116,3	62,4
LDZO	34,0	35,0	34,0	37,0	37,0	32,0	28,0	27,0	25,0	28,0	27,0	32,5
LECB	22,2	23,3	22,7	24,6	23,2	21,1	19,8	18,7	21,8	24,0	19,3	21,9
LECM	24,3	38,8	29,0	28,3	29,7	27,8	43,4	39,8	38,6	44,3	39,7	38,7
LFBB	16,0	16,0	18,0	18,0	17,0	15,0	14,0	14,0	14,0	15,0	15,0	18,0
LFEE	19,0	21,0	22,0	21,0	22,0	20,0	17,0	17,0	17,0	17,0	20,0	26,0
LFFF	26,0	34,0	39,0	37,0	38,0	34,0	30,0	29,0	25,0	26,0	31,0	38,0
LFMM	24,0	29,0	37,0	38,0	36,0	30,0	24,0	15,0	15,0	17,0	16,0	19,0
LFRR	17,0	19,0	23,0	21,0	21,0	20,0	18,0	18,0	18,0	18,0	20,0	24,0
LHCC	20,0	23,0	26,0	26,0	26,0	19,0	16,0	17,0	18,0	17,0	17,0	20,0
LIBB	97,1	98,8	87,1	133,7	181,6	106,0	86,4	85,7	78,4	85,1	86,5	97,9
LIMM	184,5	185,5	194,2	191,7	185,5	190,1	184,2	182,3	181,0	182,2	181,8	183,9
LIPP	186,1	191,0	187,6	191,9	183,2	189,4	183,9	186,4	181,8	184,6	186,5	199,6
LIRR	181,8	181,8	182,5	185,8	181,8	181,5	94,0		90,7	100,5	120,3	181,4
LJLA	47,0	60,5	60,5	64,1	57,6	55,2	35,2	28,3	31,4	37,6	41,5	51,7
LKAA	34,0	37,0	38,0	33,0	35,0	32,0	29,0	26,2	29,0	25,0	26,0	28,0
LOVV	38,0	38,0	37,0	37,0	37,0	32,0	23,0	28,0	28,0	25,0	27,0	33,0
LPPC						181,1	183,0	186,8	181,9	112,2	181,0	107,0
LRBB	23,2	22,8	25,0	29,9	35,9	21,9	22,4	22,7	22,8	25,1	23,0	27,4
LSAG	41,0	46,5	43,5	52,3	46,1	32,7	26,5	28,5	27,3	28,3	32,1	44,4
LSAZ	54,4	69,0	62,1	62,9	54,1	47,7	30,8	31,6	27,2	33,0	32,9	60,9

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

Overall RCTP Technical Continuity

The graph below shows the Required Communications Technical Performance Technical Continuity [RCTP_TC(32) and RCTP_TC(20)]. This is the probability that a LACK/ERROR is received for an uplink message within 32 seconds or 20 seconds.

Due to the technical reasons, this data is not available

[Figure 2-9: Technical Continuity](#)

RCTP Technical Continuity per Centre

The table below shows the RTCP TC at 32s per Centre and per month.

Due to the technical reasons, this data is not available

[Figure 2-10: RCTP Technical Continuity per Centre at 32s](#)

Due to the technical reasons, this data is not available

[Figure 2-11: RCTP Technical Continuity per Centre at 20s](#)

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.

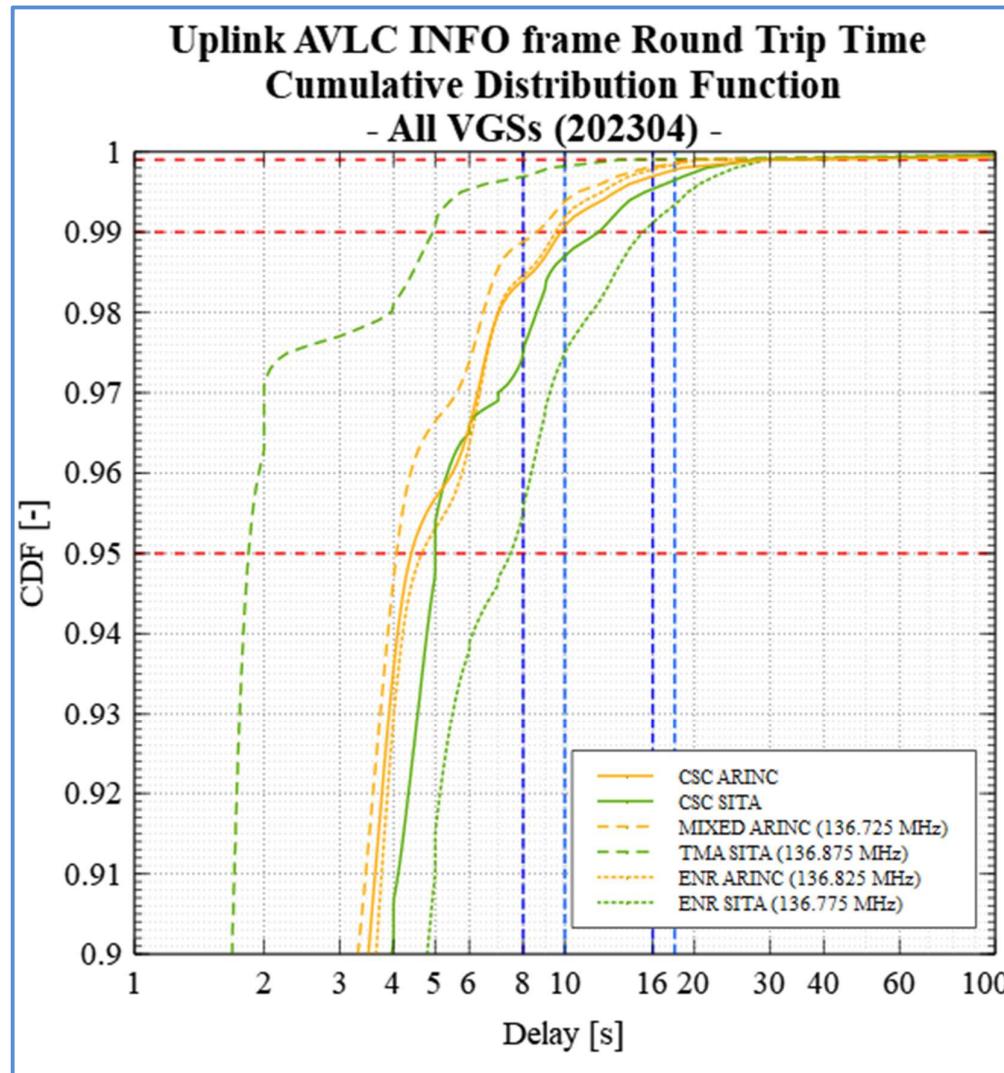


Figure 3-1: AVLC Round Trip Time

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.

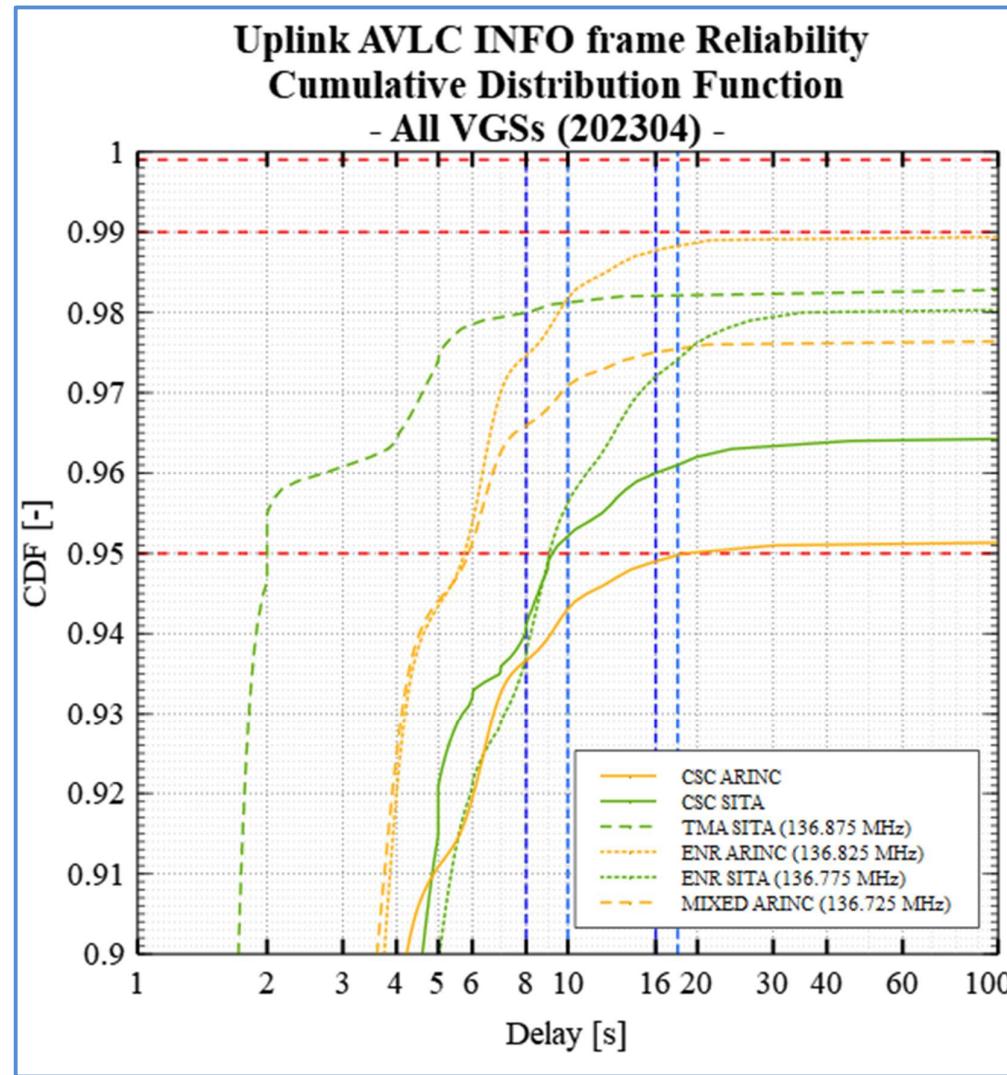


Figure 3-2: AVLC Reliability

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.

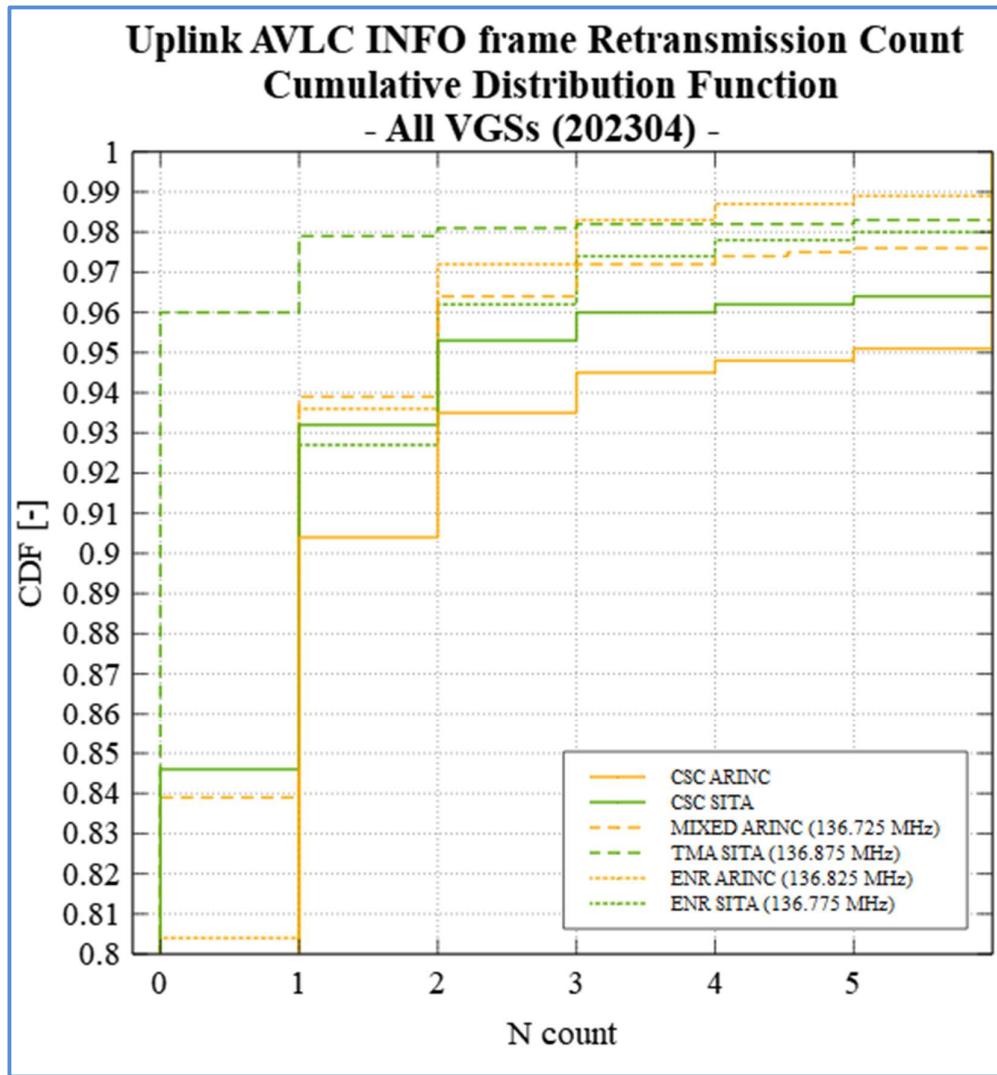


Figure 3-3: AVLc Uplink INFO frame retransmission count

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).

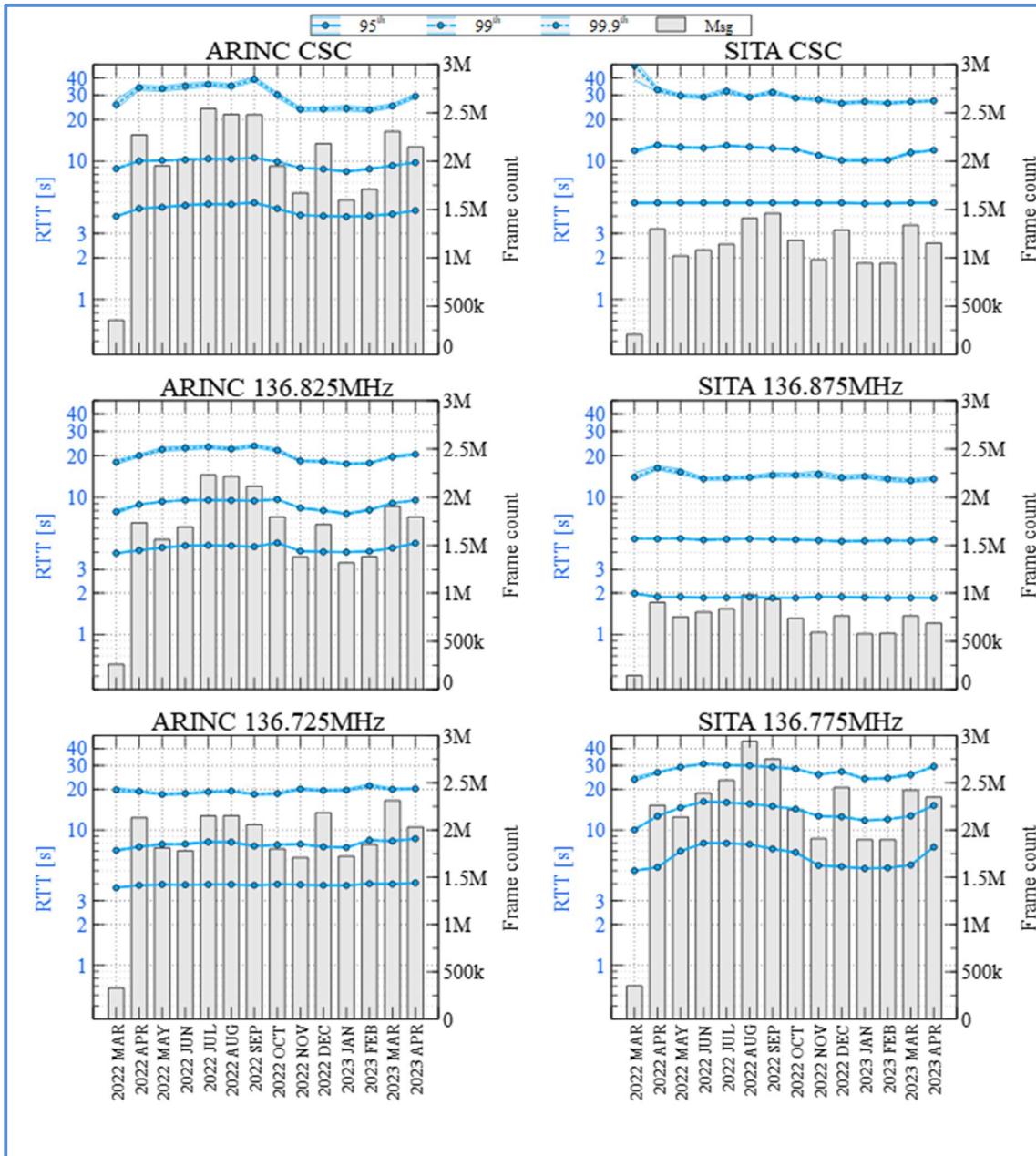


Figure 3-4: AVLC Uplink INFO Round Trip Time per Frequency

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 show 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).

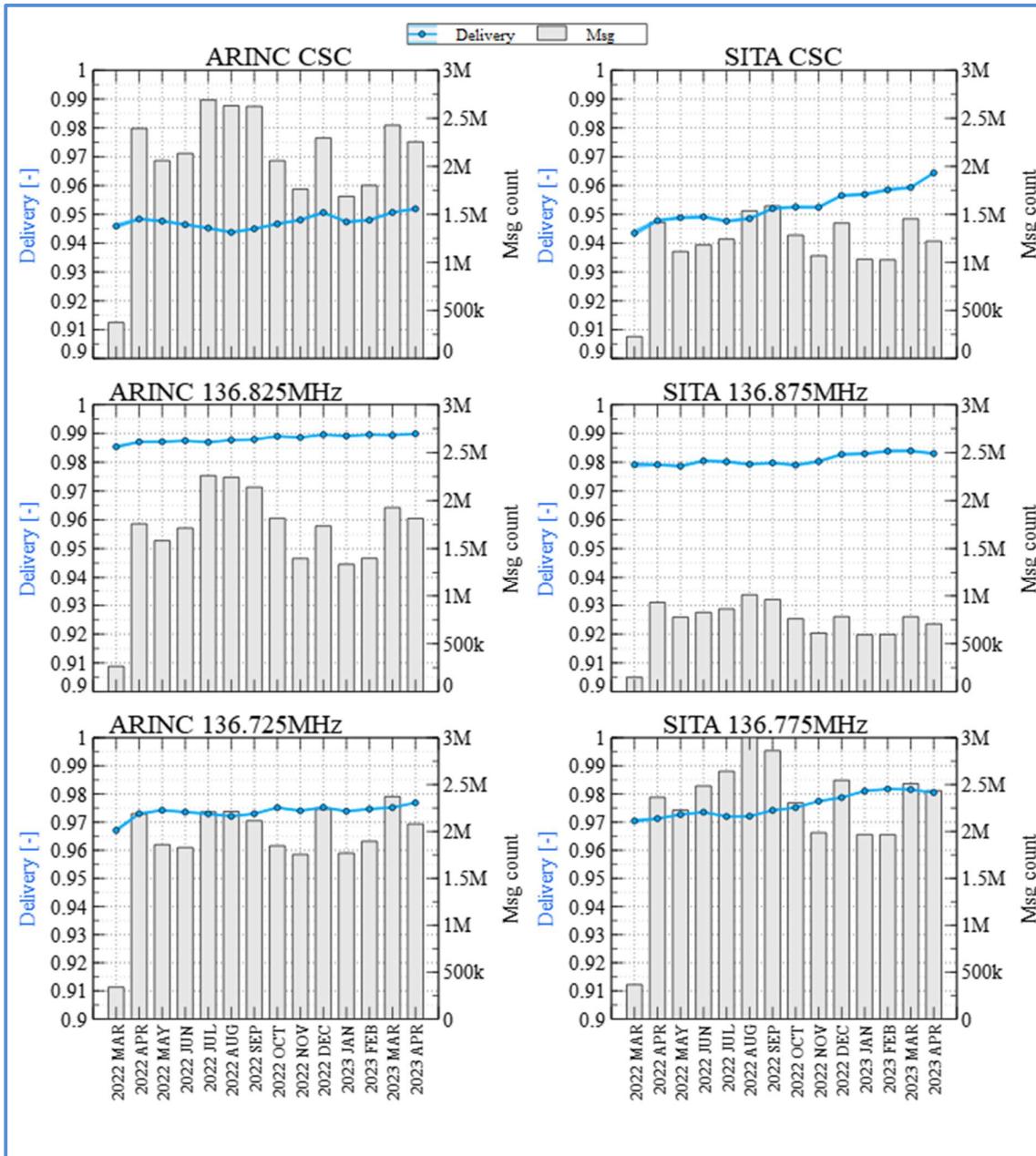


Figure 3-5: AVLC successful delivery rate per frequency

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 show 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).

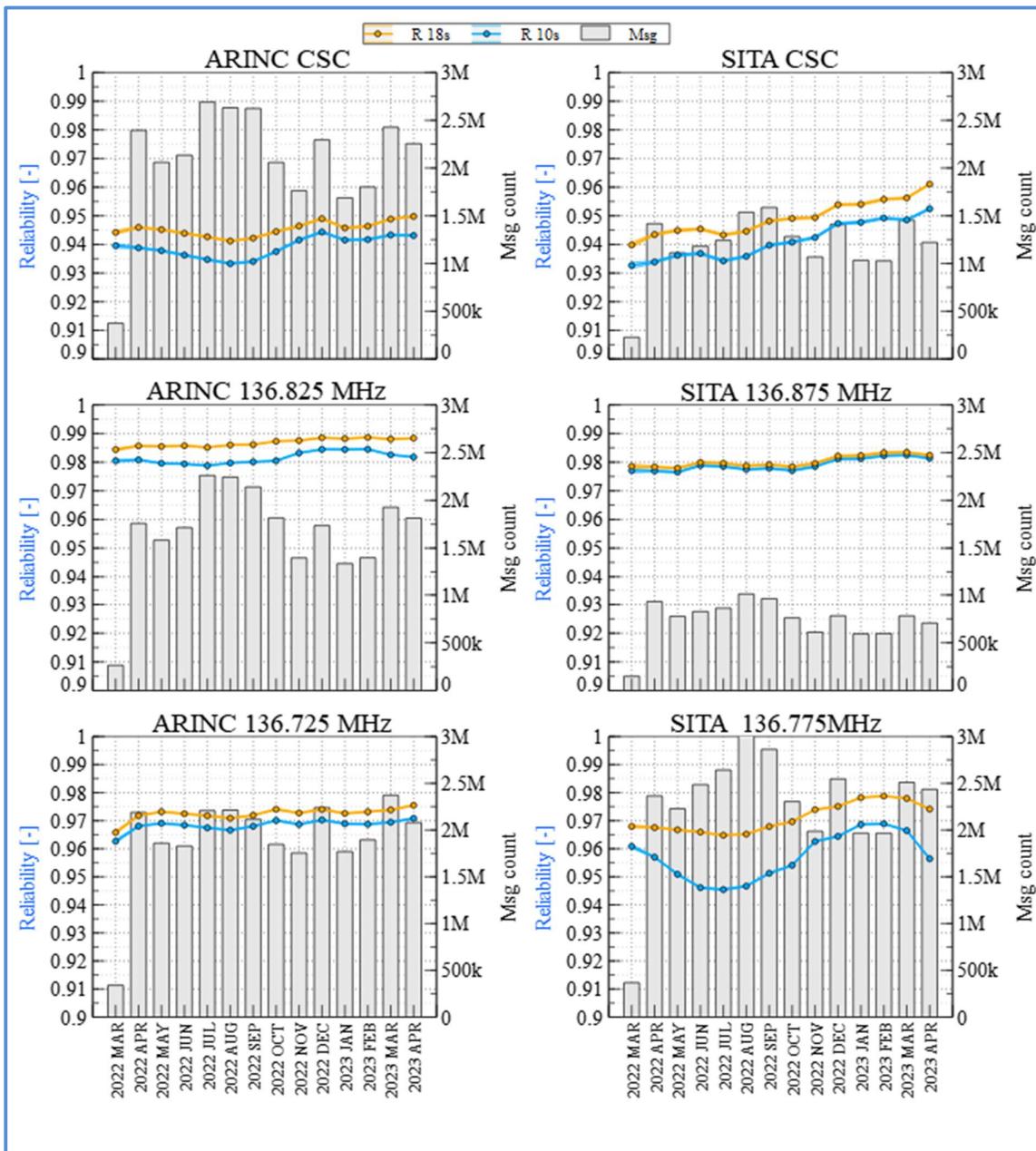


Figure 3-6: AVLC Reliability per frequency

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.

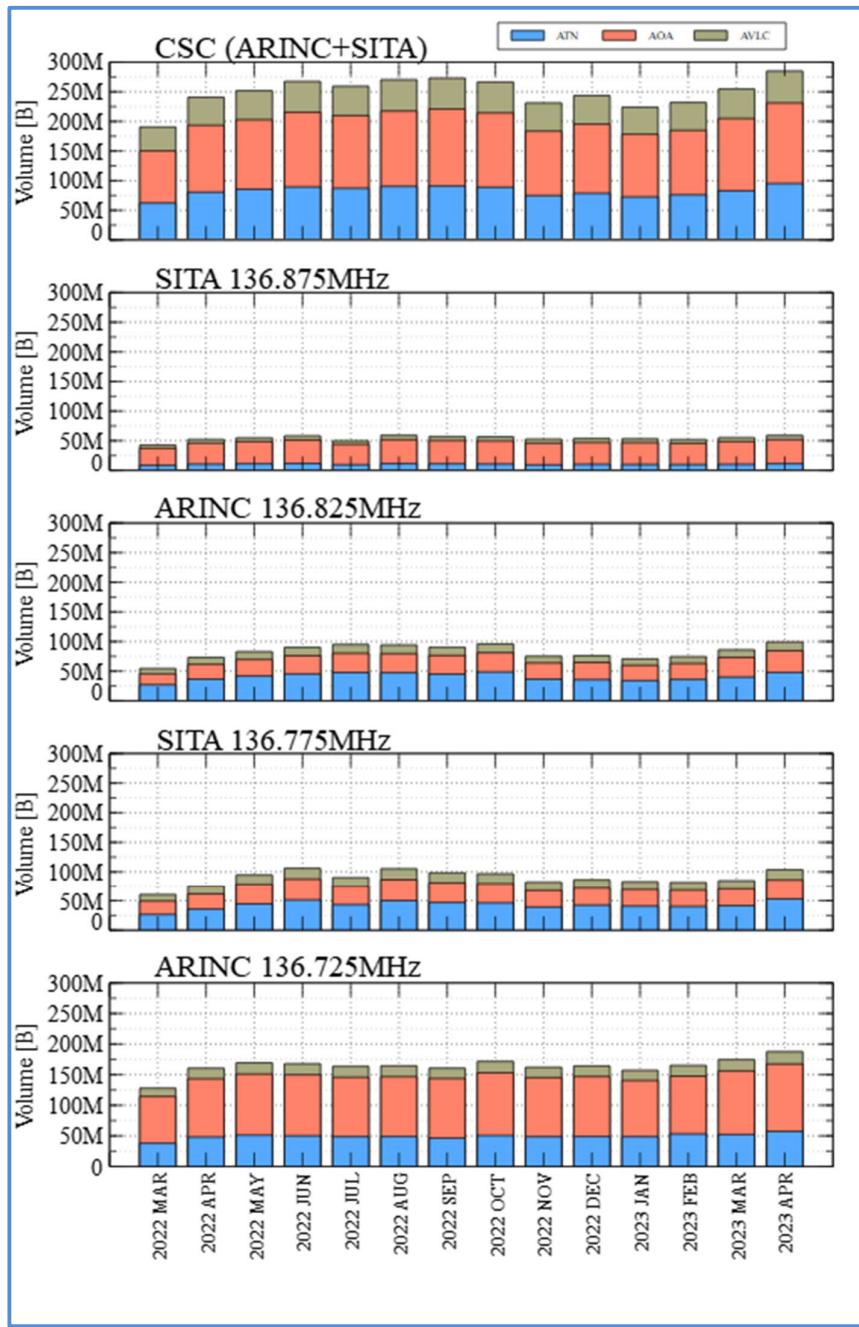


Figure 3-7: Daily average AVLC Channel load per frequency

⁶ i.e. RR, SREJ, XID, ...

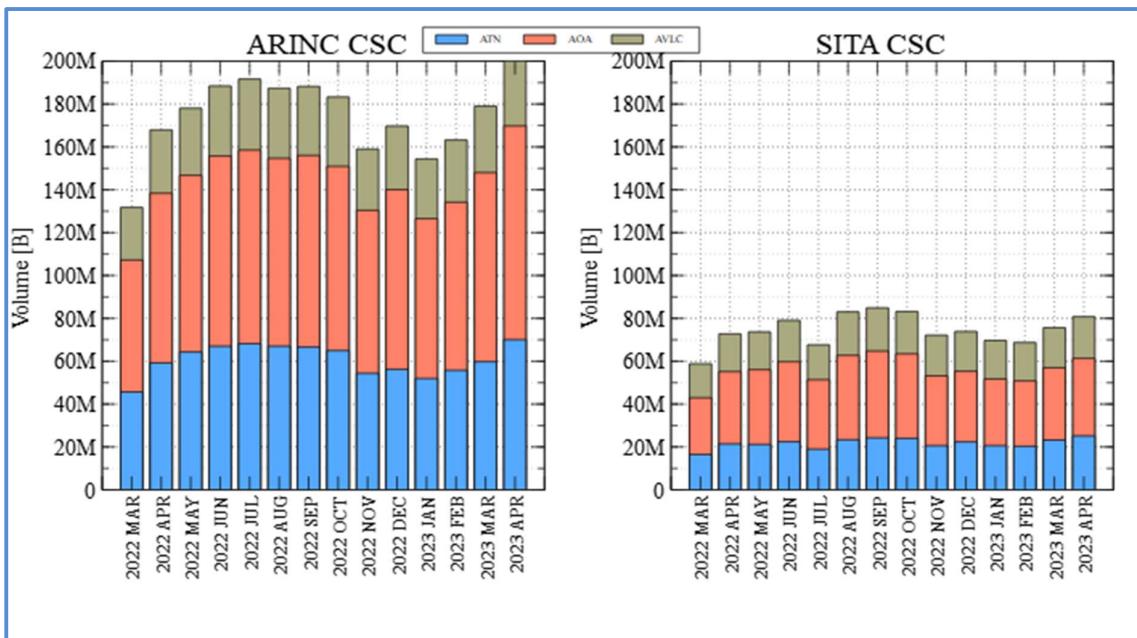


Figure 3-8: Daily average AVLC load on the CSC

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 12 May 2023, may be different in subsequent months if additional data is uploaded by the ANSPs.

Null	01/04/23	02/04/23	03/04/23	04/04/23	05/04/23	06/04/23	07/04/23	08/04/23	09/04/23	10/04/23	11/04/23	12/04/23	13/04/23	14/04/23	15/04/23	16/04/23	17/04/23	18/04/23	19/04/23	20/04/23	21/04/23	22/04/23	23/04/23	24/04/23	25/04/23	26/04/23	27/04/23	28/04/23	29/04/23															
EDUU	3,022	2,980	3,012	2,784	2,951	2,958	2,901	2,863	2,875	2,804	2,708	2,737	2,926	2,814	2,866	2,840	2,869	2,663	2,803	2,648	2,649	2,838	2,974	2,792	2,717	2,721	2,769	2,866	2,913	2,981														
EDYY	3,029	3,183	3,216	2,860	3,079	3,072	3,030	2,952	3,071	3,038	2,941	2,899	2,964	3,028	2,925	3,087	3,068	2,820	2,938	2,827	2,836	2,893	3,108	2,904	2,815	2,904	2,956	3,076	3,064	3,160														
EETT	113	119	109	114	110	107	118	135	138	124	120	102	114	122	125	133	118	123	101	140	135	141	146	123	117	118	128	140	131	155														
EFIN																																												
EGPX	840	823	849	814	759	814	807	712	916	791	796	847	861	813	770	730	724	722	759	850	800	705	865	812	712	730	776	734	708	766														
EGTT	3,670	3,770	3,821	3,669	3,659	3,783	3,822	3,713	3,754	3,612	3,585	3,106	3,694	3,848	3,674	3,802	3,782	3,687	3,681	3,742	3,792	3,562	3,761	3,795	3,656	3,624	3,805	3,833	3,649	3,799														
EISN	354	381	327	291	302	338	326	266	282	263	248	242	312	290	338	410	322	345	364	323	363	398	379	361	322	315	340	366	355															
EKDK	778	839	874	790	856	850	785	779	882	898	856	859	841	865	796	861	787	799	833	818	720	815	871	849	863	857	896	731	825															
ENOR																																												
EPWW	849	921	875	846	879	891	906	926	916	924	885	900	894	919	964	984	886	892	843	948	897	946	973	930	881	912	963	1,004	1,039	1,086														
ESMM	643	727	743	674	779	750	657	637	711	777	730	733	730	730	687	743	768	640	702	739	698	634	683	733	680	727	748	732	657	719														
ESOS	273	358	359	342	375	359	333	279	353	373	359	373	358	351	286	352	377	318	352	347	356	263	336	369	318	379	360	365	273	328														
EVRR	168	170	183	178	193	181	183	183	211	207	188	191	194	195	181	202	198	191	182	211	209	194	221	216	194	201	222	228	213	236														
EYVC	140	146	140	148	145	146	150	139	161	151	152	129	151	166	146	167	164	155	155	162	158	189	168	157	154	189	198	187	204															
GCCC	131	137	96	154	116	101	104	135	99	87	122	109	109	105	149	121	88	110	93	119	89	150	120	95	96	93	90	72	131	119														
LBSR																																												
LCCC																																												
LDZO	1,083	988	942	905	922	878	1,007	1,114	1,025	946	956	986	926	949	1,164	1,018	975	898	896	931	964	1,239	1,086	965	936	949	957	1,041	1,256	1,182														
LECB	1,642	1,550	1,558	1,531	1,522	1,580	1,691	1,662	1,624	1,731	1,671	1,548	1,577	1,682	1,716	1,683	1,646	1,529	1,602	1,713	1,754	1,722	1,668	1,608	1,538	1,673	1,797	1,823	1,697															
LECM	2,428	2,311	2,139	2,185	2,199	2,283	2,319	2,515	2,486	2,333	2,287	2,162	2,275	2,301	2,569	2,446	2,297	2,274	2,244	2,226	2,304	2,469	2,399	2,234	2,175	2,204	2,331	2,255	2,464	2,369														
LFBB	1,501	1,393	1,406	1,357	1,386	1,495	1,601	1,693	1,580	1,578	1,387	1,427	1,690	1,540	1,510	1,495	1,497	1,640	1,692	1,644	1,588	1,575	1,539	1,614	1,739	1,752																		
LFEE	1,241	1,231	1,195	1,115	1,127	1,220	1,443	1,571	1,574	1,516	1,358	1,374	1,048	1,474	1,510	1,565	1,398	1,406	1,404	1,352	1,411	1,514	1,501	1,431	1,326	1,392	1,387	1,497	1,609	1,544														
LFFF	981	1,019	1,065	1,020	986	1,046	1,137	1,047	1,118	1,070	951	1,029	1,148	1,120	1,114	1,089	1,141	1,167	1,016	1,128	1,300	1,175	1,128	1,136	1,102	1,194																		
LFMM	1,353	1,354	1,385	1,274	1,335	1,368	1,581	1,598	1,574	1,599	1,498	1,441	1,369	1,588	1,741	1,697	1,623	1,531	2,037	1,820	1,768	1,759	1,805	1,897	1,971	1,924	1,904	1,855	1,786	1,905	2,087	1,965												
LFRR	1,701	1,626	1,676	1,703	1,704	1,732	1,921	2,076	1,963	1,821	1,717	1,731																																
LGGS																																												
LHCC	1,166	1,186	1,138	1,104	1,179	1,188	1,202	1,251	1,215	1,201	1,158	1,185	1,215	1,188	1,300	1,268	1,217	1,221	1,235	1,269	1,193	1,319	1,366	1,229	1,215	1,242	1,326	1,339	1,482	1,421														
LIBB	160	166	212	221	162	224	235	206	219	218	222	184	211	247	183	191	40	210	239	55	268	226	248	209																				
LIMM	318	283	266	267	320	352	342	293	328	350	337	321	310	328	374	334	73	337	314	49	209	354	355	87	287	283	357	372	315															
LIPP	305	280	283	281	304	272	303	279	356	330	304	269	274	267	291	306	59	279	159	70	258																							
LIRR	363	366	427	389	364	377	364	418	410	439	398	395	408	380	360	405	77	365	428	106	365	438	442																					
LJLA	599	594	536	504	504	486	543	630	545	526	507	562	507	492	631	568	512	458	482	493	482	718	613	483	491	515	549	552	725	686														
LKAA	700	774	755	690	765	761	737	700	771	773	757	762	779	724	788	754	730	756	800	770	774	816	785	825	806	895	811	826	861															
LMMM																																												
LOVV	1,643	1,666	1,614	1,544	1,612	1,601	1,604	1,651	1,606	1,598	1,531	1,559	1,493	1,589	1,750	1,670	1,484	1,502	1,607	1,571	1,569	4	1,792	1,653	1,540	1,629	1,650	1,719	1,916	1,876														
LPPC	1,307	1,214	1,010	1,076	1,147	1,140	1,174	1,337	1	1,126	1,125																																	
LRBB	824	856	828	871	877	859	841	958	876	890	862	893	936	896	925	939	886	889	889	964	852	982	973	904	898	924	931	958	1,031	1,010														
LSAG	750	731	729	658	673	752	876	879	863	855	753	780	710	894	916	898	872	770	759	854	924	915	867	751	805	783	867	883	883															
LSAZ	923	858	829	768	798	878	993	981	978	977	846	907	819	1,004	993	1,053	952	876	891	932	907	983	996	919	811	896	872	957	994	969														
LZBB																																												

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