



ICAO

International Civil Aviation Organization

**Tenth Meeting of the FANS Interoperability Team – Asia
(FIT-Asia/10)**

Video Teleconference, 03 – 06 August 2020

Agenda Item 4: Review of ADS-C/CPDLC Operations and Performance

DATALINK PERFORMANCE REPORT FOR UJUNG PADANG FIR – INDONESIA

(Presented by INDONESIA)

SUMMARY

This paper presents data link performance analysis in Ujung Pandang FIR during 1 January to 31 December 2019 periode.

1. INTRODUCTION

1.1. Since 29 March 2018, Indonesia has implemented PBCS in Ujung Pandang FIR by AIC Number: 02/18 15 MAR 2018.

1.2. The performance data for Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance - Contract (ADS-C) is measured against the appropriate Required Communication Performance (RCP) 240 and Required Surveillance Performance (RSP) 180 respectively.

1.3. CPDLC performance is measured by Actual Communication Performance (ACP) and Actual Communication Technical Performance (ACTP). This paper presents ADS/CPDLC performance categorized by media type, operator and monthly performance from 1st January to 31st December 2019 for Ujung Pandang FIR.

1.4. ADS-C performance is measured by Downlink Latency, categorized by media type and monthly performance from 1st January to 31st December 2019.

2. DISCUSSION

Data Link Performance Analysis

2.1 This section covers the Actual Communications Performance (ACP) and Actual Communication Technical Performance (ACTP) measurement for CPDLC messages sent within Ujung Pandang FIR for the period from 1 January to 31 December 2019 categorized by data link media type.

2.2 Table 1 summarizes the overall CPDLC ACP and ACTP messages sent within the Ujung Pandang FIR from 1 January to 31 December 2019 by media type (Satellite and VHF). The ACP for messages sent via Satellite and VHF meet the 95 percent criterion but failed marginally for 99.9 percent criterion as shown in Table 1 below.

Table 1: Ujung Pandang FIR CPDLC ACP and ACTTP by Data Link Media Type

FIR	WAAF									
Criteria	RCP240									
Period	Jan - Jun 2019					Jul - Dec 2019				
Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark		
	ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec		ACP % <= =180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	
By Media Type										
SATCOM	13.025	98,73	99,31	99,03	99,57	10288	95,75	99,78	96,83	99,85
VHF	26.996	98,55	99,11	98,82	99,34	26774	96,46	99,55	97,48	99,59
ALL	41583	98,61	99,21	98,88	99,44	38744	96,46	99,63	97,31	99,68

2.3 **Table 2** summarizes the overall CPDLC ACP and ACTP messages sent within the Ujung Pandang FIR from 1 January to 31 December 2019 by the RGS/GES with respect to VHF Data Link (VDL) and Satellite Communication (SATCOM).

Table 2: Ujung Pandang FIR C RSP180 by VDL RGS/GES and SATCOM RGS/GES

FIR	WAAF										
Criteria	RCP240										
Period	Jan - Jun 2019					Jul - Dec 2019					
Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark			
	ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec		ACP % <= =180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec		
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES with message counts >100)									
AMQ1	VHF	2468	99,61	99,75	99,71	99,84	1560	99,26	99,69	99,36	99,72
APK1	VHF	8243	97,59	98,44	98,00	98,69	5241	93,83	98,54	96,07	98,93
APK2	VHF	2299	98,94	99,48	99,15	99,70	1137	97,30	99,83	98,77	99,86
BDJ1	VHF	1379	99,80	99,52	99,86	99,72	1141	98,95	99,72	99,25	99,80
BIK1	VHF	376	100	100	100	100	445	100	100	100	100
BKI	VHF	260	99,55	99,69	99,63	99,81	101	99,45	100	99,63	100
BPN	VHF	812	99,12	99,56	99,33	99,65	691	99,57	99,73	99,66	99,76
BPN1	VHF	343	99,35	99,52	99,60	99,75	381	94,75	95,83	96,39	97,69
BTU	VHF	110	98,44	98,59	98,51	98,72					
BTU1	VHF	101	100	100	100	100	121	100	100	100	100
DPS	VHF	917	98,71	99,05	98,87	99,26	625	98,15	98,84	98,69	98,94
DPS1	VHF	1884	99,57	99,93	99,67	99,98	1762	99,66	99,89	99,74	99,91
DRW	VHF	115	100	100	100	100					
GOV1	VHF						214	98,79	100	98,99	100

IGW1	VHF	804	96,17	96,59	96,99	98,51	369	89,54	97,98	94,61	98,97
IOR2	SAT										
JOG	VHF	131	99,44	99,57	99,49	99,67					
KOE1	VHF						373	98,95	99,61	99,15	99,70
LBU	VHF	156	100	100	100	100					
MDC1	VHF	739	98,91	98,85	99,19	99,07	455	92,75	97,65	94,09	97,90
MTS1	VHF	338	98,12	99,03	99,16	99,23	284	95,85	99,40	97,58	99,59
MYY	VHF	182	98,82	99,01	98,83	99,11	185	99,30	100	100	100
MYY1	VHF	167	100	100	100	100	249	100	100	100	100
SBW	VHF	153	98,82	98,89	98,88	99,02					
SOC1	VHF	453	99,79	99,86	99,81	99,90	294	97,81	100	97,91	100
SOQ1	VHF	543	99,34	99,26	99,46	99,47	332	95,02	96,62	97,04	97,88
SUB	VHF	1444	98,84	99,36	98,86	99,60	671	98,41	99,31	98,68	99,36
SUB1	VHF	1214	99,80	99,93	99,84	99,95	1060	99,63	99,85	99,64	99,86
TTE1	VHF	569	98,32	98,73	99,15	99,07	1376	96,68	99,77	96,96	99,82
TWU	VHF	183	95,20	97,80	96,25	98,27	383	99,75	100	99,77	100
TWU	SV						157	99,75	99,89	100,00	100
TWU1	VHF	374	99,03	100	99,19	100	543	97,32	100	97,40	100
UPG	VHF	299	100	100	100	100					
UPG1	VHF	214	99,63	99,68	99,66	99,74	219	100	100	100	100
XXA	SV	894	97,89	99,92	97,96	100					
XXA	SAT	8775	98,21	99,23	98,55	99,56	6027	95,55	99,16	96,91	99,44
XXP	SV	720	98,94	100	98,98	100					
XXP	SAT	4681	98,89	99,28	99,17	99,58	2364	97,46	99,29	98,18	99,34
ZAM	VHF	217	81,14	99,60	81,41	99,73	219	88,12	100	88,80	100

2.4 This section covers the Downlink Latency measurement for ADS-C messages sent within Ujung Pandang FIR for the period from 1 January to 31 December 2019 categorized by data link media type. The Downlink Latency for messages sent via Satellite and VHF meet the 95 percent criterion but failed marginally below the 99.9 percent criterion. Table 3 present ADS-C Downlink Latency for messages sent within the Ujung Pandang FIR per media type (Satellite, VHF, HF) for the period from 1 January to 31 December 2019.

Table 3: Ujung Pandang FIR ADS-C Downlink Latency per Media Type

FIR	WAAF					
Criteria	RSP180					
Period	Jan-June 2019			July-December 2019		
	Message Counts	95% % <= 90sec	99,90% % <= 180sec	Message Counts	95% % <= 90sec	99,90% % <= 180sec
By Media Type						
SATCOM	63020	97,68	99,30	51262	98,05	99,50
HF	740	64,32	82,12	725	64,83	82,07
VHF	227071	98,94	99,47	220669	99,20	99,62
ALL	290.831	98,58	99,39	272656	98,89	99,55

2.5 **Table4** present ADS-C Downlink Latency by Remote Ground Station (RGS) Ground Earth Station (GES) with respect to VHF Data Link (VDL) and Satellite Communication (SATCOM) sent within the Ujung Pandang FIR for the period from 1 January to 31 December 2019.

Table 4: Ujung Pandang FIR ADS-C Downlink Latency by Media Type

FIR		WAAF					
Criteria		RSP180					
Period		Jan-June 2019			July-December 2019		
		Message Counts	95% % <= 90sec	99,90% % <= 180sec	Message Counts	95% % <= 90sec	99,90% % <= 180sec
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES with message counts >100 recorded)					
ADL8	VHF	124	100	100	167	100	100
AKL	VHF	143	100	100			
AKL2	VHF				273	100	100
AMQ1	VHF	5335	98,85	98,96	5218	99,29	99,45
APK1	VHF	53579	97,74	99,05	44430	97,70	98,94
APK2	VHF	21487	98,79	99,57	15478	99,10	99,80
ASP	VHF	114	100	100	104	100	100
ASP1	VHF	295	100	100	320	100	100
AYQ1	VHF				243	98,06	98,21
BDJ1	VHF	4647	99,95	99,97	5048	99,76	99,96
BIK1	VHF	793	98,59	99,13	762	98,97	99,06
BKI	VHF	9345	99,88	99,89	3788	99,98	100
BKI1	VHF	1210	100	100,00	2373	100	100
BME1	VHF	147	98,68	98,76	1372	99,34	99,41
BNE1	VHF				218	100	100
BNE2	VHF				143	100	100
BNE7	VHF	121	100	100	123	100	100
BNE8	VHF	128	100	100	232	100	100
BPN	VHF	2952	99,80	99,90	2972	99,75	99,85
BPN1	VHF	1008	98,28	99,43	1601	72,20	88,44
BRK1	VHF	253	100	100	288	100	100
BTH1	VHF				270	99,54	100
BTU	VHF	619	100	100	686	99,90	99,96
BTU1	VHF	418	99,88	100	413	100	100
BWN	VHF				264	100	100
BWN1	VHF	1237	100	100	1460	100	100
CAN	VHF	305	100	100	164	99,70	100
CEB	VHF	536	99,68	99,82	278	99,66	99,68
CEB1	VHF	565	99,88	99,99	637	99,82	100
CGK1	VHF	108	100	100	312	98,40	99,21

CGK2	VHF	448	99,55	99,81	409	99,16	99,54
CNS1	VHF	184	100	100	214	100	100
CRK	VHF	260	98,47	98,49	117	100	100
CRK1	VHF	317	100	100	229	100	100
CTL	VHF	121	100	100	136	100	100
CTL1	VHF	243	100	100	278	100	100
DJJ1	VHF				141	100	100
DPS	VHF	4114	99,53	99,75	4646	99,73	99,91
DPS1	VHF	10335	99,33	99,38	10706	99,69	99,80
DRB1	VHF	530	97,33	97,40	1650	99,21	99,46
DRW	VHF	21734	99,55	99,75	19707	99,80	99,92
DRW1	VHF	7511	99,78	99,86	11731	99,89	99,90
DVO	VHF	1537	98,67	98,88	1341	99,23	99,42
DVO1	VHF	1128	99,82	99,83	220669	99,20	99,62
DVO1	SAT				51262	98,05	99,50
GOV1	VHF	4199	99,98	99,98	4118	99,78	99,79
HKG1	VHF	130	100	100			
HKG2	VHF	194	97,95	98,00			
HTI1	VHF				120	100	100
IG1	VHF	281	86,48	93,44	566	87,46	95,11
IGW1	VHF	5201	97,40	99,23	2629	97,44	99,12
ISA	VHF				105	100	100
ISA1	VHF	360	99,51	99,61	364	100	100
JOG	VHF	388	100	100	114	100	100
KCH	VHF	1651	99,29	99,89	1821	98,02	99,73
KCH1	VHF	1844	99,34	99,47	3673	99,65	99,87
KNX1	VHF				244	99,41	99,80
KOE1	VHF				2741	99,73	99,90
KTA1	VHF				133	100	100
LAO	VHF	455	97,65	97,83	284	99,36	99,53
LBU	VHF	2815	99,93	99,93	1838	100	100
LGH1	VHF	199	99,65	100	305	99,73	99,81
LRE1	VHF	262	100	100	295	100	100
MCY	VHF				101	100	100
MDC1	VHF	2488	96,42	98,39	1873	95,37	93,91
MEL1	VHF	186	100	100	124	100	100
MEL7	VHF	259	100	100	255	100	100
MFM	VHF	253	99,26	100	129	99,25	99,77
MKY	VHF				155	100	100
MNL	VHF	584	98,87	99,66	377	100	100
MNL2	VHF				172	100	100
MNL8	VHF				232	100	100
MQL1	VHF	117	100	100			
MTS1	VHF	2412	97,68	98,86	2623	98,82	99,76
MYY	VHF	1810	100	100	2778	99,90	99,97

MY1	VHF	2530	100	100	3511	99,97	99,99
NRT1	VHF				139	100	100
NTL	VHF	198	100	100	157	100	100
PHE1	VHF				973	98,84	99,38
PER1	VHF	216	100	100			
PLM	VHF	586	98,41	98,77			
PLM1	VHF				3076	97,34	98,72
POM1	VHF	187	100	100	224	100	100
PPS	VHF	131	96,24	96,36	109	98,62	99,37
SBW	VHF	550	99,65	99,72	429	99,46	99,66
SDK	VHF	1577	100	100	2715	99,97	100
SDK1	VHF	203	100	100	417	99,80	100
SFS1	VHF	144	99,60	99,97			
SIN	VHF	717	96,56	97,77	808	97,09	99,16
SIN1	VHF	102	98,44	99,19	174	97,90	98,38
SIN2	VHF	253	93,27	94,23	285	95,67	98,06
SIN8	VHF	486	98,14	98,37	498	99,62	99,67
SIN9	VHF	281	100	100			
SOC1	VHF	1020	99,91	99,96	1602	99,98	100
SOQ1	VHF	1986	97,18	98,68	2120	78,68	91,08
SRG	VHF	1067	99,50	99,86	671	98,25	99,78
SUB	VHF	7538	99,85	99,92	4224	99,94	100
SUB1	VHF	5395	99,97	99,99	5521	99,94	99,98
SYD	VHF	238	100	100	109	100	100
SYD1	VHF	240	99,87	100	326	100	100
SYD2	VHF	332	99,74	99,80			
SYD8	VHF	237	100	100	111	99,30	99,57
SZX	VHF	198	100	100	138	100	100
TCA1	VHF	382	100	100			
TIS1	VHF	828	100	100	1495	99,72	99,94
TMW1	VHF	148	100	100	133	100	100
TSV1	VHF				104	100	100
TTE1	VHF	2800	96,29	98,21	7040	97,97	99,25
TWU	VHF	4242	99,92	99,99	3653	99,95	99,97
TWU1	VHF	1504	100	100	2700	99,90	99,93
UPG	VHF	1372	99,71	99,73	776	99,91	100
UPG1	VHF	1028	100	100	1902	99,88	99,98
XXA	SAT	42260	97,08	99,14	37758	97,59	99,35
XXP	SAT	21017	98,49	99,50	13754	98,85	99,74
ZAM	VHF	3612	99,20	99,39	2380	99,55	99,86

2.6 **Table 5** present ADS-C Downlink Latency measurements per operator sent within the Ujung Pandang FIR for the period from 1 January to 31 December 2019.

Table 5: Ujung Pandang FIR ADS-C Downlink Latency per Operator

FIR	WAAF					
Criteria	RSP180					
Period	Jan-June 2019			July-December 2019		
	Message Counts	95% % <= 90sec	99,90% % <= 180sec	Message Counts	95% % <= 90sec	99,90% % <= 180sec
By Aircraft Operator / Type (only message counts >100 recorded)						
AIC/B788	1789	98,55	99,37	2047	98,19	99,03
ANZ/B772	1652	97,94	99,71	2555	98,47	99,85
ANZ/B789	329 1	99,91	99,97	2652	99,97	100
BAW/B77W	1215	98,87	99,82	1331	99,21	99,88
CAL/A333	1846	99,89	99,98	2560	99,73	99,83
CAL/A359	6030	99,44	99,72	6748	99,65	99,82
CAL/B77W	1302	99,46	99,96	202	99,65	100
CBJ/A332	2346	98,83	99,62	2731	99,47	99,84
CBJ/A333				154	99,43	100
CCA/A332	2678	98,88	99,53	957	99,22	99,73
CCA/A333	3087	99,22	99,59	2656	99,02	99,58
CCA/B77W	495	96,44	99,39	459	94,92	99,19
CCA/B789	1240	99,85	99,90	1103	98,71	99,43
CEB/A333	4370	98,89	99,34	3755	98,35	99,01
CES/A332	9364	98,75	99,27	7444	99,09	99,57
CES/A333	3922	99,72	99,81	2863	99,73	100
CES/A359	192	97,84	100	1036	99,73	99,98
CES/B77W	1322	95,84	99,29	183	98,86	99,63
CES/B789	2058	99,86	99,96	2648	99,82	100
CHH/A332	2852	99,38	99,80	847	99,79	99,89
CHH/A333	4267	99,30	99,91	4383	99,63	99,98
CPA/A333	12138	98,20	99,54	10350	98,59	99,73
CPA/A359	13437	99,65	99,83	10522	99,41	99,69
CPA/A35K				3049	99,44	99,85
CPA/B773	1083	100	100	2145	99,96	100
CPA/B77W	10047	95,23	98,19	7397	96,08	98,98
CRK/A332	3075	99,22	99,58	715	100	100
CRK/A333	2682	99,55	99,64	3565	99,59	99,75
CSC/A332	2083	98,37	99,43	2247	98,87	99,50
CSC/A333	430	99,34	99,76	562	99,18	99,76
CSC/A359	1375	99,79	99,87	709	99,87	99,99
CSN/A21N	219	100	100	3603	99,84	99,86
CSN/A332	1252	98,99	99,71	4574	99,17	99,55

CSN/A333	26073	97,92	99,13	18791	98,22	99,23
CSN/A388	1049	98,95	100	300	98,67	100
CSN/B789	7241	99,67	98,90	3506	99,49	99,59
CXA/B788	3983	99,26	99,44	3784	99,77	99,92
CXA/B789	673	99,69	100	453	99,81	99,98
ETD/B77W				136	99,75	100
ETD/B789	501	99,00	99,92	1002	99,02	99,62
EVA/A333	4068	99,82	99,97	3143	99,97	100
EVA/B78X				720	99,92	100
FDX/B77L	179	96,19	100	1243	97,60	99,31
GCR/A332	1058	99,51	99,81	1101	100	100
GCR/A333	603	99,53	99,91			
GIA/A332	872	99,56	99,77	508	96,28	96,44
GIA/A333	10307	99,69	99,89	7467	99,82	99,95
GIA/B77W	3123	99,52	99,95	1621	99,25	99,78
HVN/A359	131	97,73	98,01			
HVN/B789	702	99,63	99,82	621	99,69	99,82
IDX/A333	166	100	100			
JST/B788	11777	99,36	99,63	11714	99,71	99,86
KAL/A333	950	99,74	100	797	99,79	99,95
KAL/B773				141	99,89	100
KLM/B77W	804	99,38	99,99	971	99,61	99,99
LNI/A333	166	99,54	99,85			
LNI/A339				123	100	100
MAS/A332	2621	99,51	99,67	2463	99,71	99,83
MAS/A333	7415	99,06	99,36	9153	99,52	99,64
MAS/A359	873	98,78	99,48	262	98,87	99,21
PAL/A321				139	100	100
PAL/A333	3908	97,43	98,37	6074	98,88	99,30
PAL/A21N	8107	97,72	98,99	4876	98,26	98,99
PAL/ A359	474	99,44	99,94			
QFA/A332	9224	98,07	98,92	8050	98,82	99,18
QFA/A333	11679	98,50	99,12	14055	99,02	99,36
QFA/A388	2850	99,79	99,82	1733	99,90	99,98
QFA/B789	2333	99,14	99,89	2639	99,60	99,95
QTR/B77L	257	95,33	99,03	296	97,30	99,67
QTR/B77W	1167	98,11	98,86	1383	96,05	97,72
QTR/B788	635	98,91	99,63	231	98,27	98,67
RBA/A20N	129	100	100	2148	99,72	99,97
RBA/A320	3223	99,63	99,85			
RBA/B788	1823	99,22	99,59	1198	100	100
SIA/ A333	642	98,90	99,14	495	98,90	99,17
SIA/ A359	9098	98,71	99,35	10726	98,85	99,48
SIA/ A388	1909	99,83	99,99	1361	99,56	100
SIA/ B772	9095	98,45	99,83	939	98,30	99,67

SIA/ B77W	8510	95,96	98,35	8661	96,84	98,72
SIA/ B78X				289	99,66	99,89
SLK/A320	363	99,50	100	425	99,14	99,87
TAX/A333				917	99,02	99,87
TAX/A339				665	99,37	100
TGW/B788	704	99,86	99,94	1047	99,87	99,99
TGW/B789	1235	99,80	99,99	1297	99,92	99,93
THA/A359	1972	99,85	99,90	2569	98,79	99,76
THA/B772	2411	97,84	99,69	2296	99,21	99,69
THA/B789	3291	99,85	99,96	3139	99,97	100
UAE/A388	976	99,90	100	932	99,41	99,93
UAE/ B77L	654	94,39	98,44	968	96,45	99,23
UAE/ B77W	7638	97,46	99,72	8609	96,72	99,59
VOZ/A332	5770	97,21	98,54	4955	97,50	98,89
XAX/A333	6839	97,78	98,46	8880	99,39	99,81

2.7 **Attachment A** shows the CPDLC ACP, ACTP, and PORT per operator within the Ujung Pandang FIR for the period from 1 January to 31 December 2019.

2.8 **Attachment B** contains the Ujung Pandang FIR performance reports shown as figures as follows:

- a. CPDLC ACP by Data Link Media Type
- b. CPDLC ACP per Month
- c. CPDLC ACTP per Media Type
- d. CPDLC ACTP per Month
- e. CPDLC ACP per Operator
- f. ADS-C Downlink Latency per Media Type
- g. ADS-C Downlink Latency per Month
- h. ADS-C Downlink Latency per Operator

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

.....

ATTACHMENT A

FIR	WAAF											
Criteria	RCP240											
Period	Jan - Jun 2019						Jul - Dec 2019					
Message Counts	95% benchmark		99.9% Benchmark		95%	Message Counts	95% benchmark		99.9% Benchmark		95%	
	ACP	ACTP	ACP	ACTP	PORT		ACP	ACTP	ACP	ACTP	PORT	
	% <= 180sec	% <= 120sec	% <= 210sec	% <= 150sec	% <60sec		% <=180sec	% <= 120sec	% <= 210sec	% <= 150sec	% <60sec	
By Aircraft Operator / Type (only message counts >100 recorded)												
AIC/B788	175	100	100	100	100	98,00	173	99,45	100	99,48	100	99,49
ANZ/B772	304	98,31	99,25	99,07	99,43	97,42	397	96,53	99,32	97,77	99,46	99,64
ANZ/B789	479	99,99	100	100	100	97,91	284	99,35	100	99,65	100	99,64
BAW/B77W	207	99,53	100	99,74	100	97,65	148	99,33	99,51	99,49	99,63	100
CAL/A333	188	99,51	99,79	99,59	99,94	98,14	291	99,24	100	99,84	100	100
CAL/A359	1162	95,89	97,99	96,56	98,33	93,55	1122	94,83	98,99	96,56	99,50	97,83
CAL/B77W	205	97,93	98,62	98,37	98,87	96,69						
CBJ/A332	339	90,12	92,33	92,17	94,56	89,15	263	86,80	92,45	87,28	94,01	95,02
CCA/A332	464	95,33	99,37	95,49	99,45	94,40	103	89,55	97,15	90,14	98,07	93,70
CCA/A333	567	98,66	99,93	98,77	100	97,41	300	93,48	99,52	94,67	100	96,34
CCA/B789	265	100	100	100	100	99,48	243	98,59	98,93	98,90	99,06	100
CEB/A333	622	97,57	99,27	97,91	99,68	96,52	420	94,70	99,77	96,19	99,86	97,18
CES/A332	1533	99,10	99,48	99,15	99,76	97,06	1024	92,87	98,17	95,15	98,52	98,35
CES/A333	638	99,77	99,75	100	99,96	99,16	378	98,87	99,93	99,58	100	97,57
CES/A359							183	96,04	100	98,68	100	99,78
CES/B77W	251	99,69	99,61	99,75	99,66	99,87						
CES/B789	463	98,42	100	99,57	100	92,01	416	89,30	98,59	94,44	99,20	99,49
CHH/A332	496	98,63	99,53	98,91	100	96,57	109	94,15	100	95,11	100	95,59
CHH/A333	927	96,45	99,53	96,75	99,79	94,07	748	92,65	99,84	95,29	100	97,33
CPA/A333	1860	98,94	99,76	99,06	99,84	97,42	1358	98,01	99,95	98,48	100	98,34
CPA/A359	2568	97,86	99,86	98,01	99,90	97,03	1754	96,82	99,74	96,87	99,78	97,07
CPA/A35K							509	98,26	99,96	98,32	100	98,48
CPA/B773	109	100	100	100	100	100	203	100	100	100	100	100
CPA/B77W	1363	98,67	98,65	99,01	99,12	98,31	652	95,45	97,24	96,47	97,88	99,23
CRK/A332	636	99,17	99,85	99,26	100	98,51						
CRK/A333	454	99,80	100	99,81	100	98,97	437	99,09	99,96	99,32	100	99,32
CSC/A332	239	97,80	98,05	98,37	98,61	95,48	239	92,22	98,83	94,15	99,22	94,83
CSC/A359	233	93,87	100	94,58	100	92,27						
CSN/A21N							600	98,50	99,42	99,12	99,63	99,13
CSN/A332	196	91,92	93,65	92,43	94,48	91,11	694	94,03	97,05	95,39	98,01	96,99
CSN/A333	3820	96,06	97,46	96,65	98,01	95,18	2569	91,16	97,10	93,54	98,05	96,81

FIT-Asia/10 – WP/11
Attachment A

CSN/A388	148	98,10	98,80	98,19	99,00	97,47						
CSN/B789	1758	99,50	99,59	99,60	99,65	98,86	792	99,29	99,75	99,36	99,78	99,66
CXA/B788	799	99,60	99,67	99,78	99,71	99,37	593	99,72	99,69	99,77	99,72	99,89
CXA/B789	165	100	100	100	100	100						
EVA/A333	619	99,11	99,77	99,19	100	97,94	389	99,51	100	99,53	100	98,74
EVA/B78X							147	98,81	99,66	99,13	100	94,56
GCR/A332	239	99,71	99,89	99,80	100	97,76	159	96,41	100	96,47	100	96,24
GCR/A333	135	95,60	100	95,85	100	92,66						
GIA/A333	803	97,43	100	97,51	100	96,39	582	97,38	99,87	97,84	100	96,80
GIA/B77W	347	99,42	99,50	99,64	99,66	99,35	180	99,50	98,83	100	99,44	100
HVN/B789	149	99,13	100	99,60	100	97,32						
JST/B788	1193	99,59	99,85	99,79	99,89	98,66	996	99,61	99,82	99,68	99,85	98,80
MAS/A332	394	99,26	99,92	99,29	100	99,25	225	98,55	99,59	98,66	99,70	98,75
MAS/A333	1119	99,61	99,85	99,75	99,88	98,91	941	99,40	99,92	99,46	99,95	98,94
MAS/A359	251	99,65	99,90	99,81	100	98,89						
PAL/A21N	997	96,06	96,65	96,87	98,29	93,48	577	94,89	98,01	95,54	98,67	92,20
PAL/A333	465	92,74	98,60	92,93	98,79	92,31	534	93,73	98,34	94,22	98,48	93,49
QFA/A332	1418	97,83	98,70	98,73	98,88	96,47	1023	97,80	99,04	98,39	99,27	95,94
QFA/A333	1642	98,55	98,80	98,83	98,90	97,02	1295	98,85	99,31	99,02	99,35	96,45
QFA/A388	325	98,81	100	98,82	100	97,78	143	97,99	100	98,02	100	97,46
QFA/B789	267	100	100	100	100	98,50	280	99,88	99,66	100	99,91	97,38
RBA/A320	300	99,95	99,52	100	100	99,20	215	100	99,92	100	100	99,12
RBA/B788	272	100	99,94	100	100	99,31	161	100	100	100	100	100
SIA/A359	1307	95,65	96,98	96,20	97,71	94,99	987	96,09	96,62	96,44	97,50	95,00
SIA/A388	240	95,60	96,79	96,44	97,79	94,31	160	97,06	97,77	97,13	97,90	96,41
SIA/B772	446	100,00	99,94	100	100	99,80						
SIA/B77W	1132	99,80	99,77	99,91	99,87	99,56	957	99,43	99,60	99,53	99,63	99,29
TAX/A333							110	99,24	100	99,29	100	99,10
TGW/B789	187	100	100	100	100	100	106	100	100	100	100	99,53
THA/A359	361	99,76	100	99,81	100	99,46	323	99,42	100	99,44	100	98,53
THA/B772	440	99,10	99,56	99,26	99,61	98,64	289	99,56	99,46	99,73	99,67	99,05
THA/B789	498	100	100	100	100	100	300	100	100	100,00	100	99,42
UAE/A388	138	98,71	100	98,77	100	98,59						
UAE/B77L	101	99,58	99,32	99,95	99,57	99,90	153	99,72	99,51	99,91	99,65	99,84
UAE/B77W	953	99,82	99,90	99,87	99,92	99,16	601	99,69	99,94	99,72	100	99,32
VOZ/A332	788	97,13	97,45	98,20	98,16	97,34	565	97,86	98,32	98,29	99,34	96,37
XAX/A333	1173	99,55	99,83	99,62	99,92	98,78	856	99,64	99,91	99,76	99,94	98,79

ATTACHMENT B

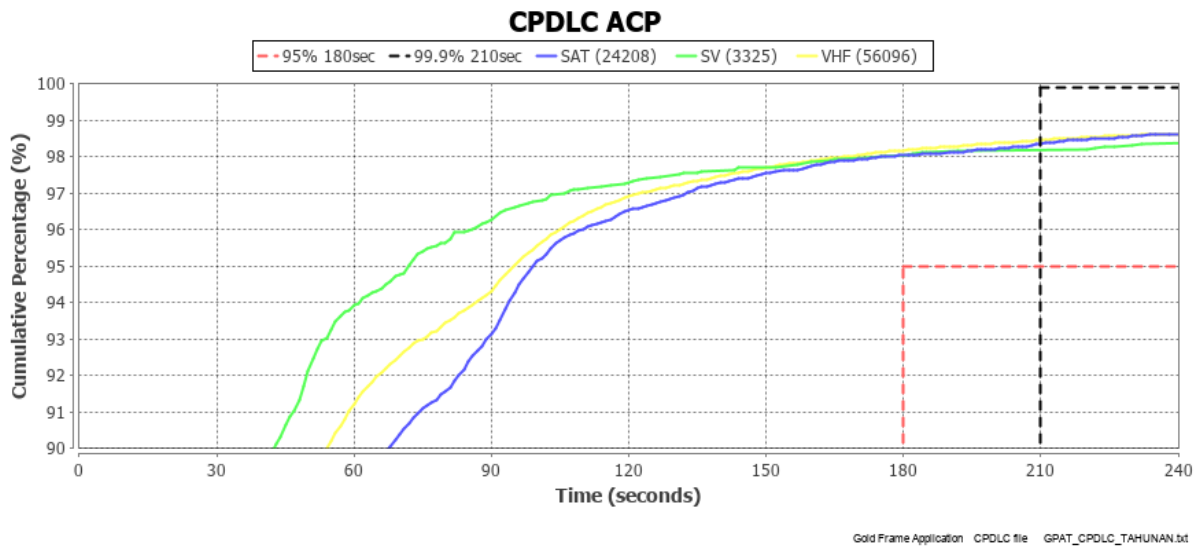


Figure 1:Ujung Pandang FIR CPDLC ACP by Data Link Media Type

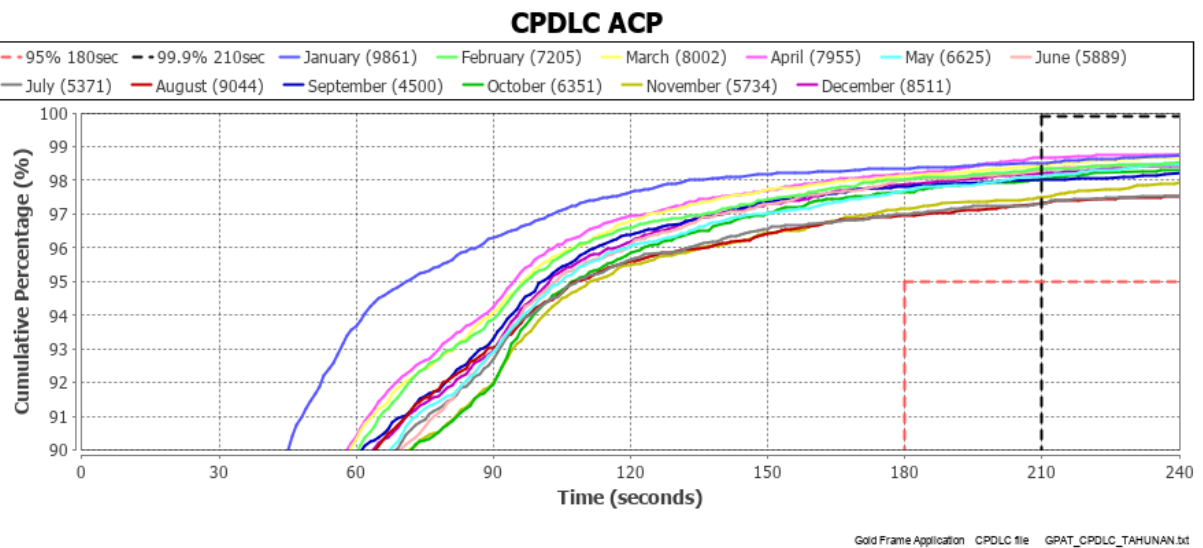


Figure 2: Ujung Pandang FIR CPDLC ACP per Month

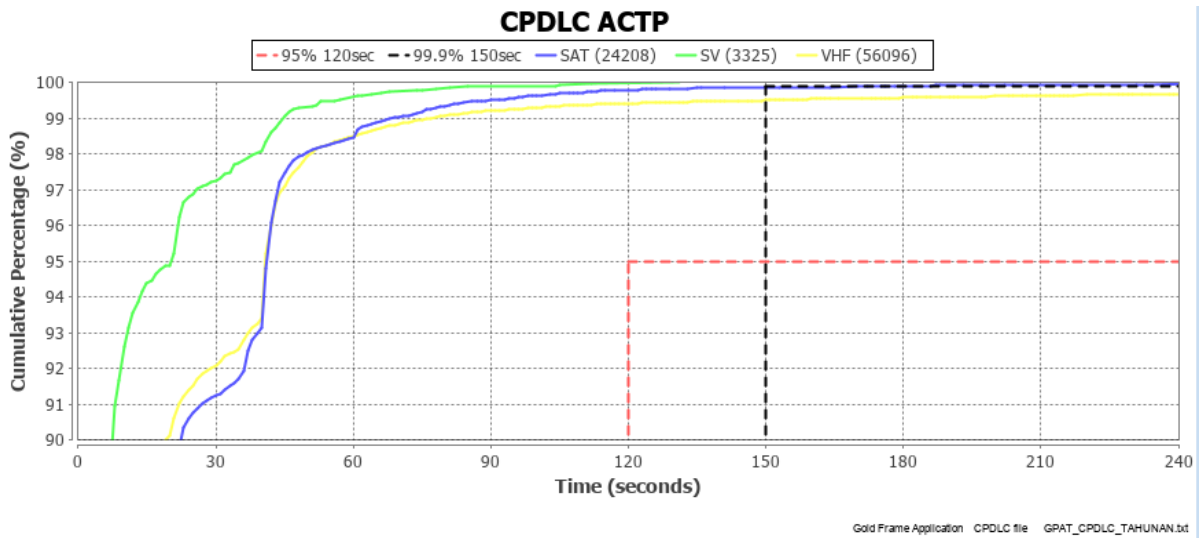


Figure 3: Ujung Pandang FIR CPDLC ACTP per Media Type

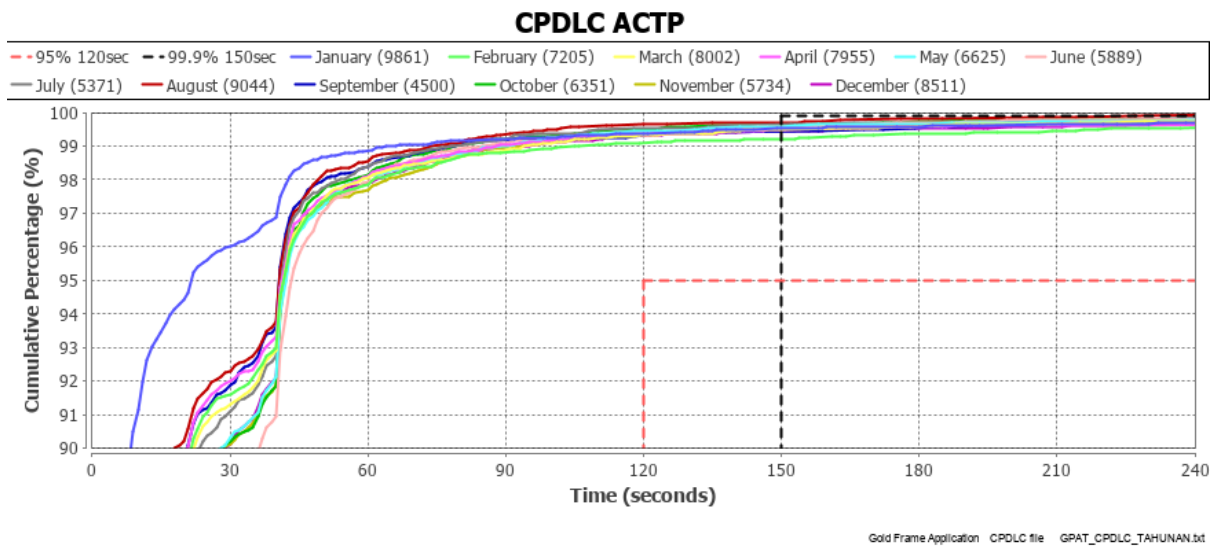


Figure 4: Ujung Pandang FIR CPDLC ACTP per Month

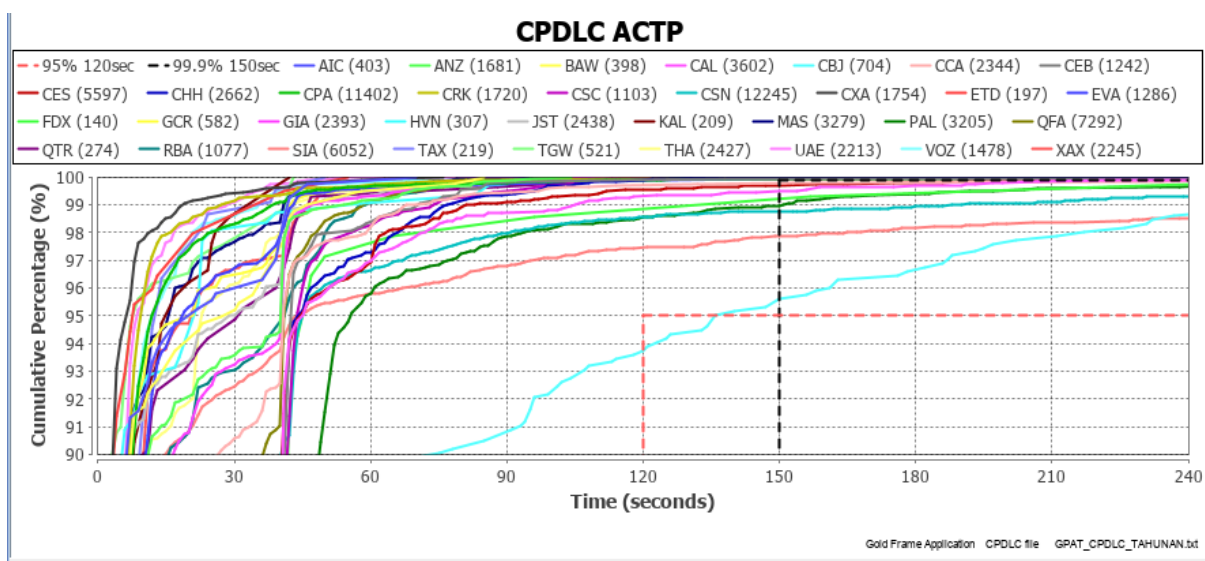


Figure 5: Ujung Pandang FIR CPDLC ACP per Operator

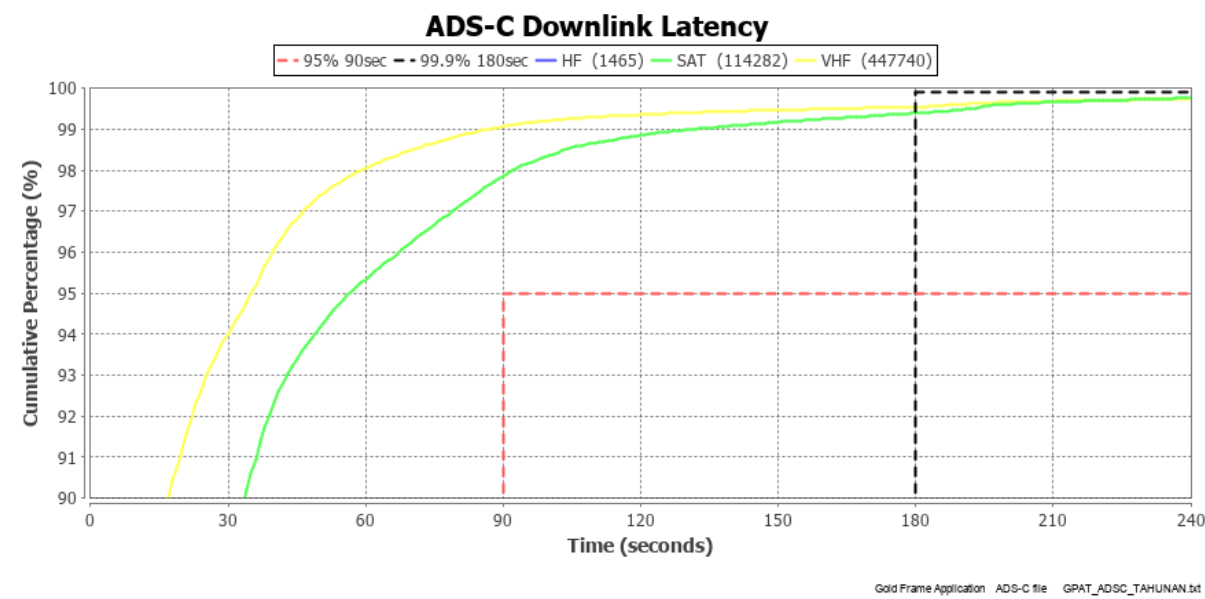


Figure 6: Ujung Pandang FIR ADS-C Downlink Latency per Media Type

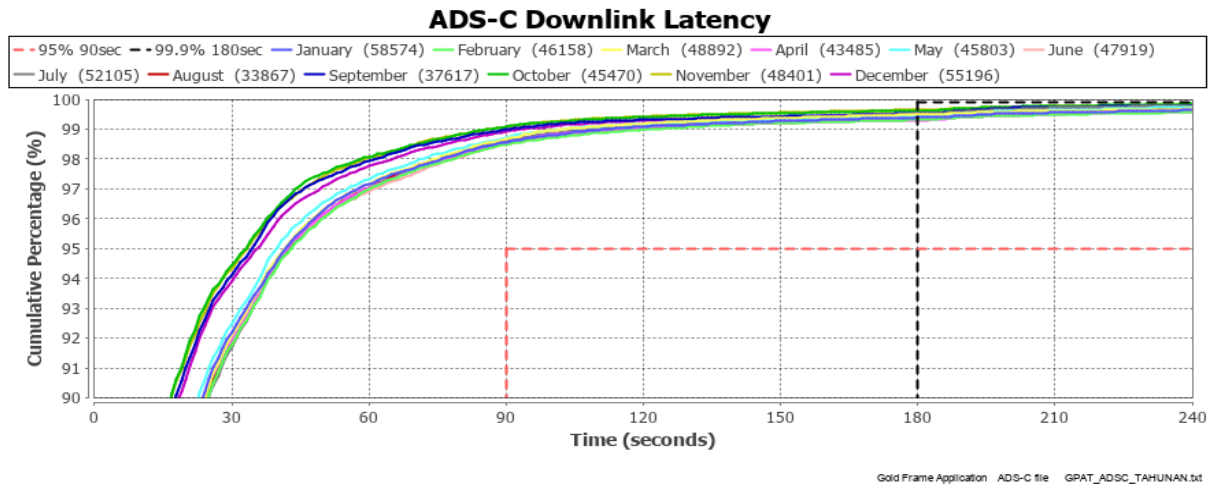


Figure 7: Ujung Pandang FIR ADS-C Downlink Latency per Month

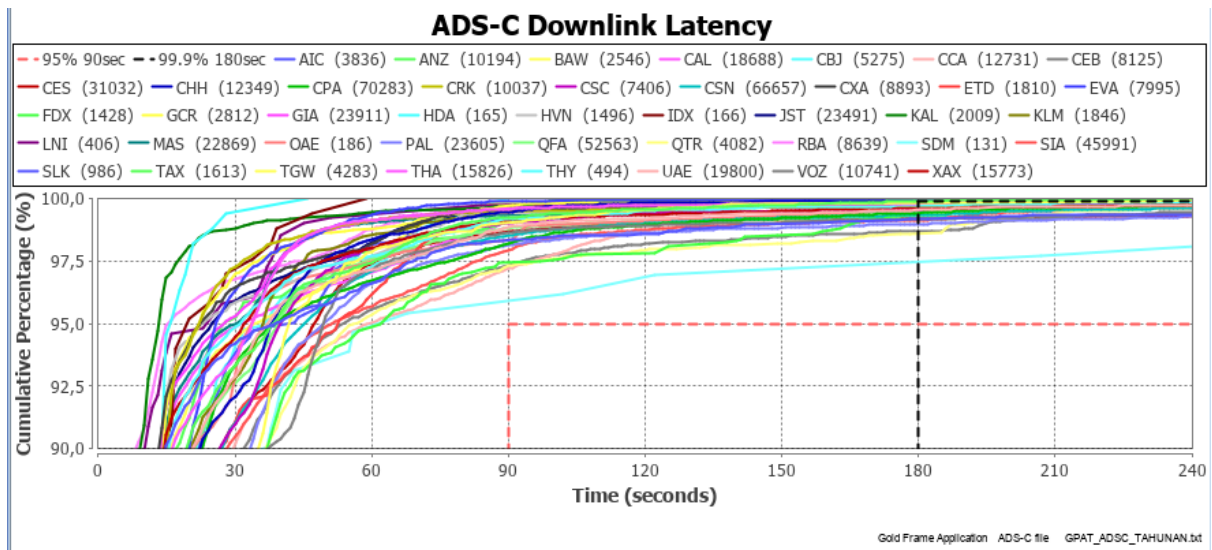


Figure 8: Ujung Pandang FIR ADS-C Downlink Latency per Operator