



Jan – Jun, 2022

# PBCS Monitoring Report in Fukuoka FIR

Presented by: SAITO Masahiro



Japan Civil Aviation Bureau (JCAB)  
Ministry of Land, Infrastructure, Transport and Tourism  
Japan (MLIT)

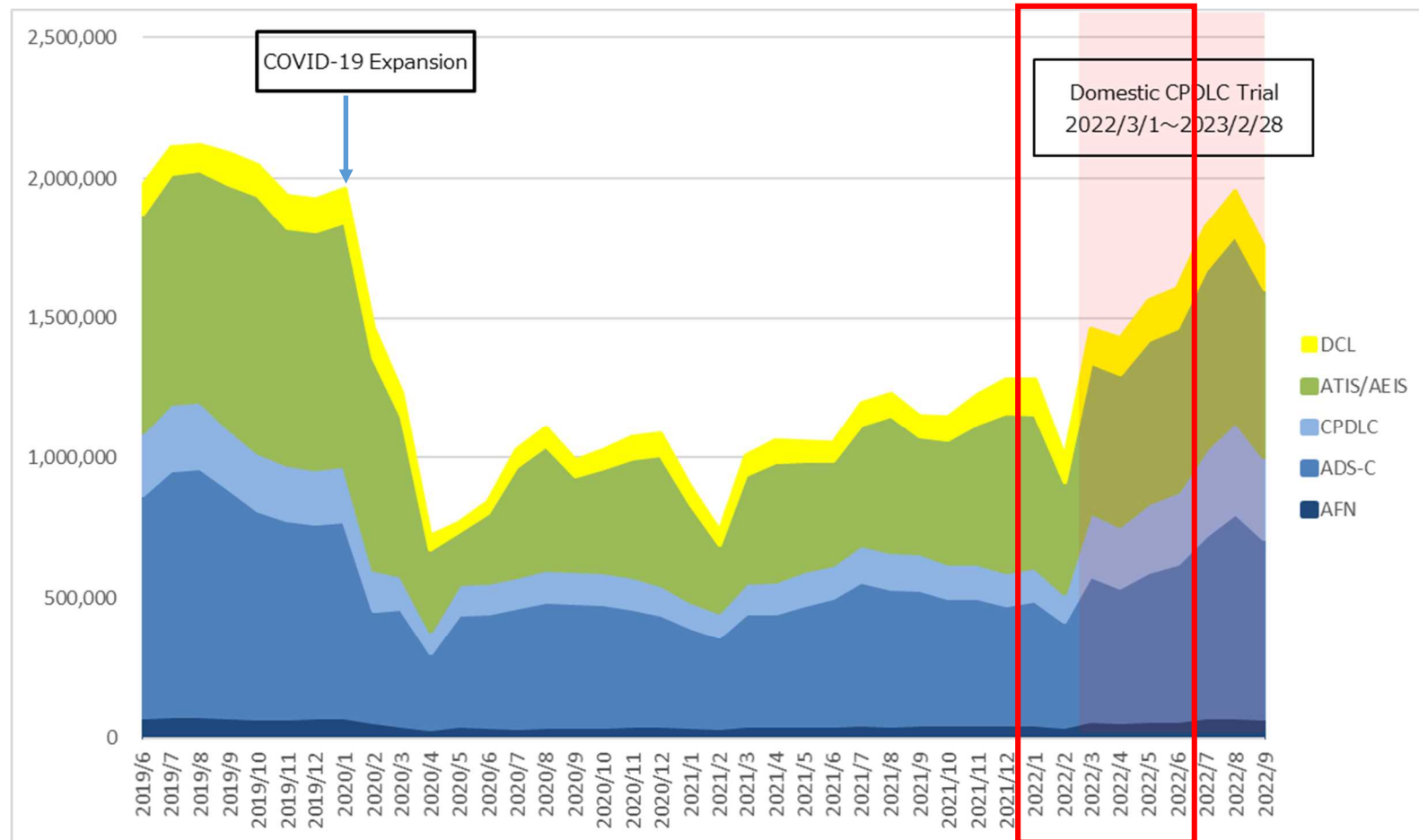
**CRA JAPAN**

Central Reporting Agency in Japan

IPACG FIT/35  
26 Sep, 2023

# Datalink Message volume in Fukuoka FIR

- This graph shows total monthly number of messages in Fukuoka FIR.
- With the start of domestic CPDLC trial, datalink message volume is returning to before COVID-19 expansion.



Evaluation period

- 1) PBCS monitoring report in Fukuoka FIR for January 1 to June 30, 2022.
- 2) This report contains:
  - Availability and unplanned outage report
  - Continuity analysis result for each parameter
    - Performance by Media Type
    - Performance by Month
    - Performance by Station ID
    - Performance by Operator

# Availability

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# Availability (July 2021 – June 2022)

CSP	Service	Location	Availability(%)	Number of Unplanned Outage	Number of Unplanned Outage > 10min	Accumulated Unplanned Outage Time(min)
SITA	Classic Aero/SBB	Global	99.99%	1	1	23
	Classic Aero	APK1(Paumalu)	99.97%	4	3	121
		APK2(Perth)	99.96%	4	4	158
	Iridium	IGW1(Phoenix)	99.98%	2	2	77
ARINC	Classic Aero/SBB	Global	99.98%	1	1	98
	Classic Aero	XXA(Paumalu)	99.97%	3	3	156
		XXP(Perth)	99.97%	2	2	127
		XXQ(Perth)	99.97%	2	2	127
	SBB	XXS(Paumalu)	99.97%	3	2	122
	Iridium	IG1(Phoenix)	99.89%	2	2	545
AVICOM	POA/AOA	Japan	100.00%	0	0	0
DLCS	DLCS	RJJJ	99.98%	1	1	104

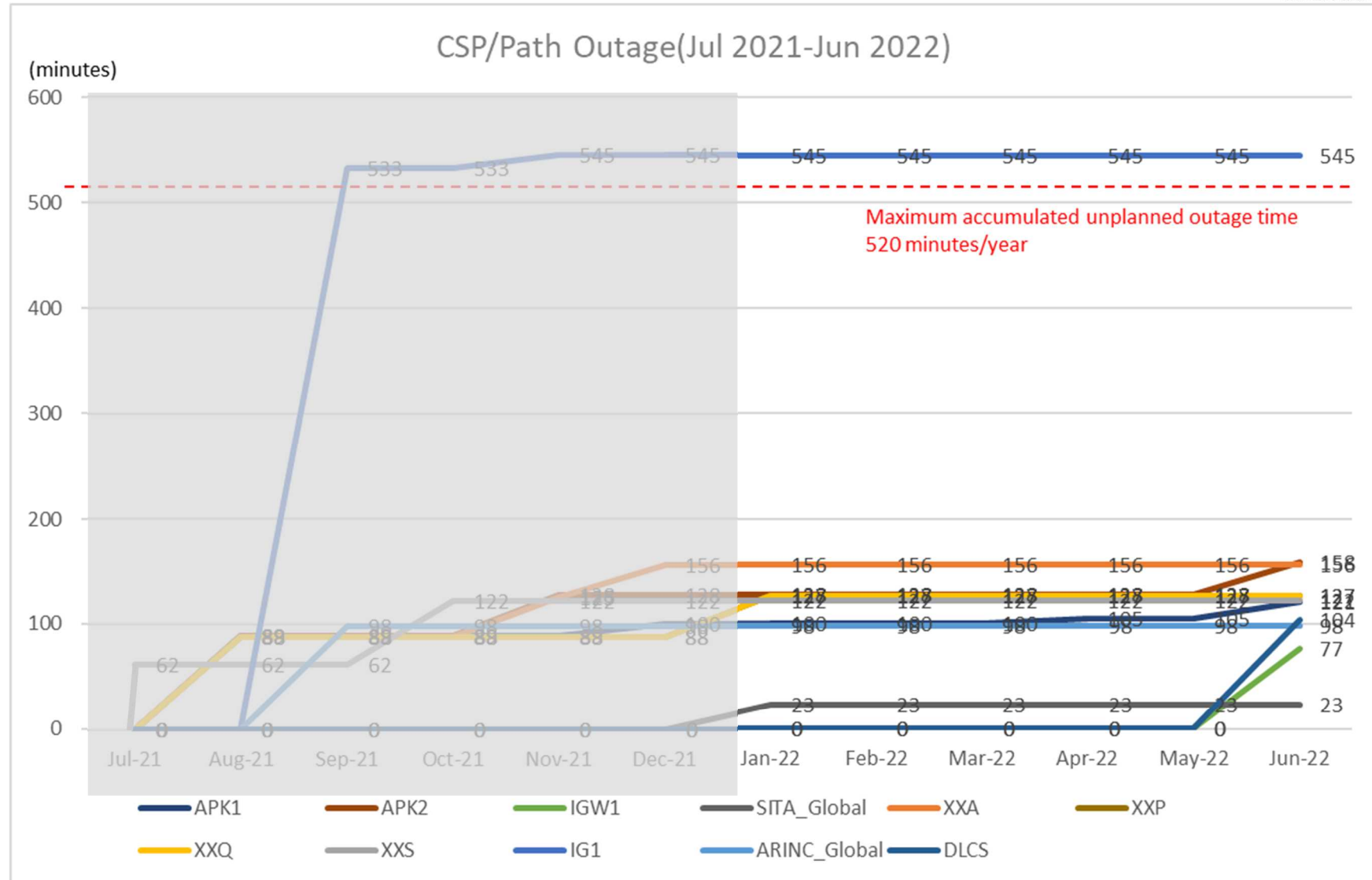
Legend:

	Meets Efficiency
	Under Efficiency but above Safety
	Under criteria

# Unplanned Outages

Start Date	Start Time	Duration (min)	CSP	Service Involved	Location Involved	Reason	Comment (Operational Impact)
2022/1/7	20:41	23	SITA	SITA	Global	SITA Datalink Processor in Montreal outage	No impact on flight HF voice 8 aircrafts
2022/1/19	17:25	39	ARINC	I4	XXP	Service degradation due to Inmarsat ground station outage(Australia: Perth)	No impact on flight
2022/1/19	17:25	39	ARINC	I4	XXQ	Service degradation due to Inmarsat ground station outage(Australia: Perth)	No impact on flight
2022/4/14	1:47	5	SITA	SITA	APK1	outage occurred in APAC	No impact on flight
2022/6/6	21:43	61	SITA	Iridium	IGW1	outage occurred at Iridium ground station	No impact on flight
2022/6/9	0:53	104	DLCS	DLCS	RJJJ	DLCS processor outage	No impact on flight HF voice 32 aircrafts
2022/6/14	13:38	14	SITA	SITA	APK2	SITA line service interruption	No impact on flight
2022/6/23	22:01	16	SITA	SITA	APK1	SITA line service interruption	No impact on flight
2022/6/23	22:01	16	SITA	SITA	APK2	SITA line service interruption	No impact on flight
2022/6/23	22:01	16	SITA	SITA	IGW1	SITA line service interruption	No impact on flight

# Accumulated Unplanned Outage

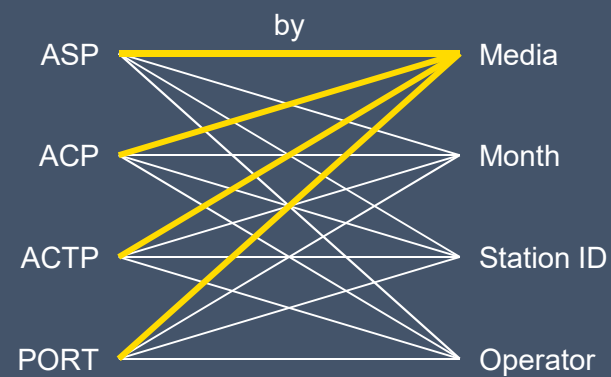


# Continuity

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## Performance by Media Type



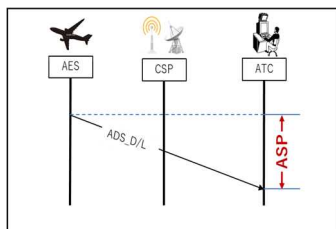
# Observed Performance by Media Type

Media Type	RSP180			RCP240					
	Count of ADS-C	ASP		Count of CPDLC	ACP		ACTP		PORT
		95%	99.9%		95%	99.9%	95%	99.9%	95%
Total	1,843,788	98.49%	99.66%	37,884	99.75%	99.85%	99.78%	99.84%	99.46%
SAT	1,417,871	98.32%	99.63%	34,132	99.74%	99.85%	99.78%	99.83%	99.44%
VHF	425,917	99.04%	99.75%	3,518	99.88%	99.88%	99.97%	99.97%	99.63%
SAT/VHF *1	---	---	---	119	98.31%	99.15%	99.15%	99.15%	99.15%
VHF/SAT *2	---	---	---	115	100.00%	100.00%	93.91%	99.13%	99.13%
<div> <div>* 1 SAT/VHF : Communication using satellite for uplink and VHF for downlink</div> <div>* 2 VHF/SAT : Communication using VHF for uplink and satellite for downlink</div> </div> <div> Legend: <div>Meets criteria</div> <div>Under criteria but above 99.0%</div> <div>Under criteria</div> </div>									

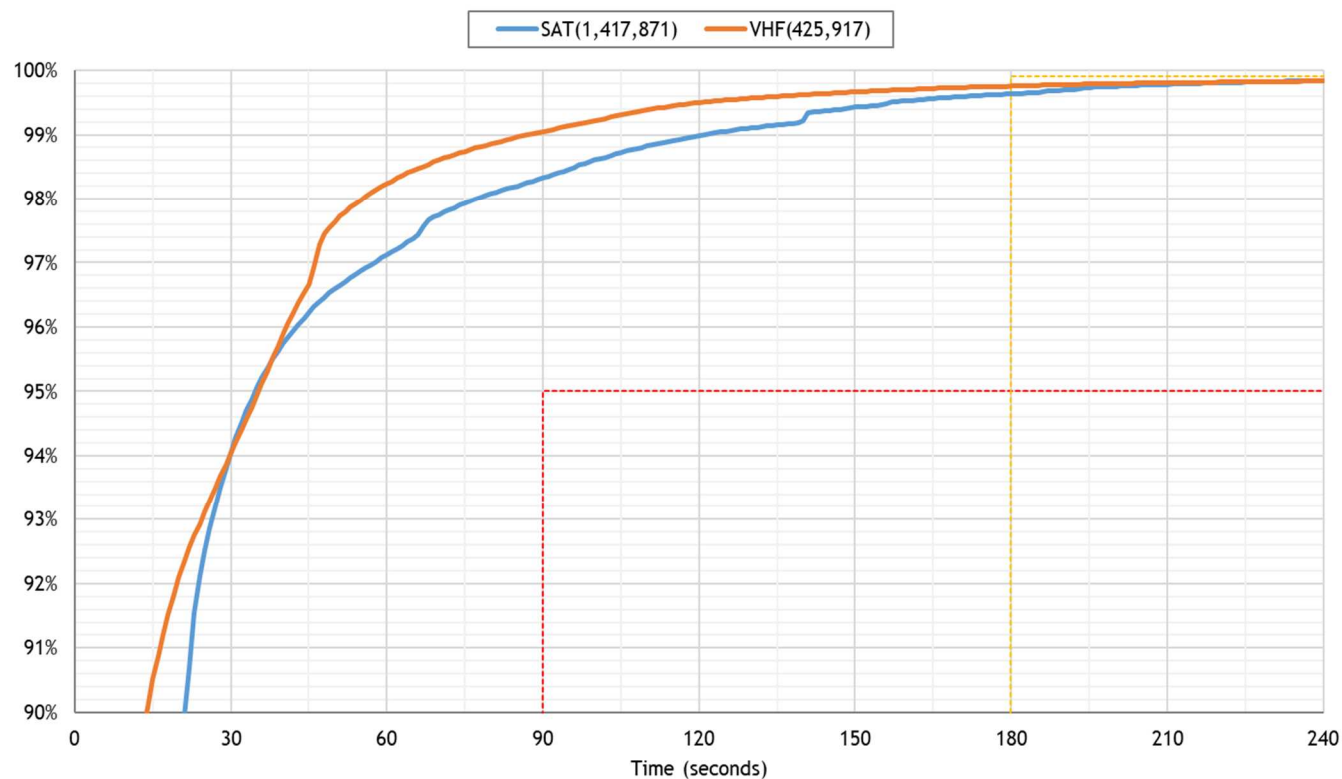
# ASP by Media Type

## Fukuoka FIR - By Media Type - January to June 2022 ADS-C Actual Surveillance Performance (ASP)

ASP measurement section



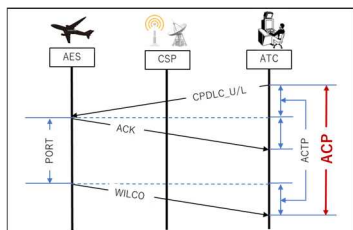
ASP:ADS Downlink transaction time



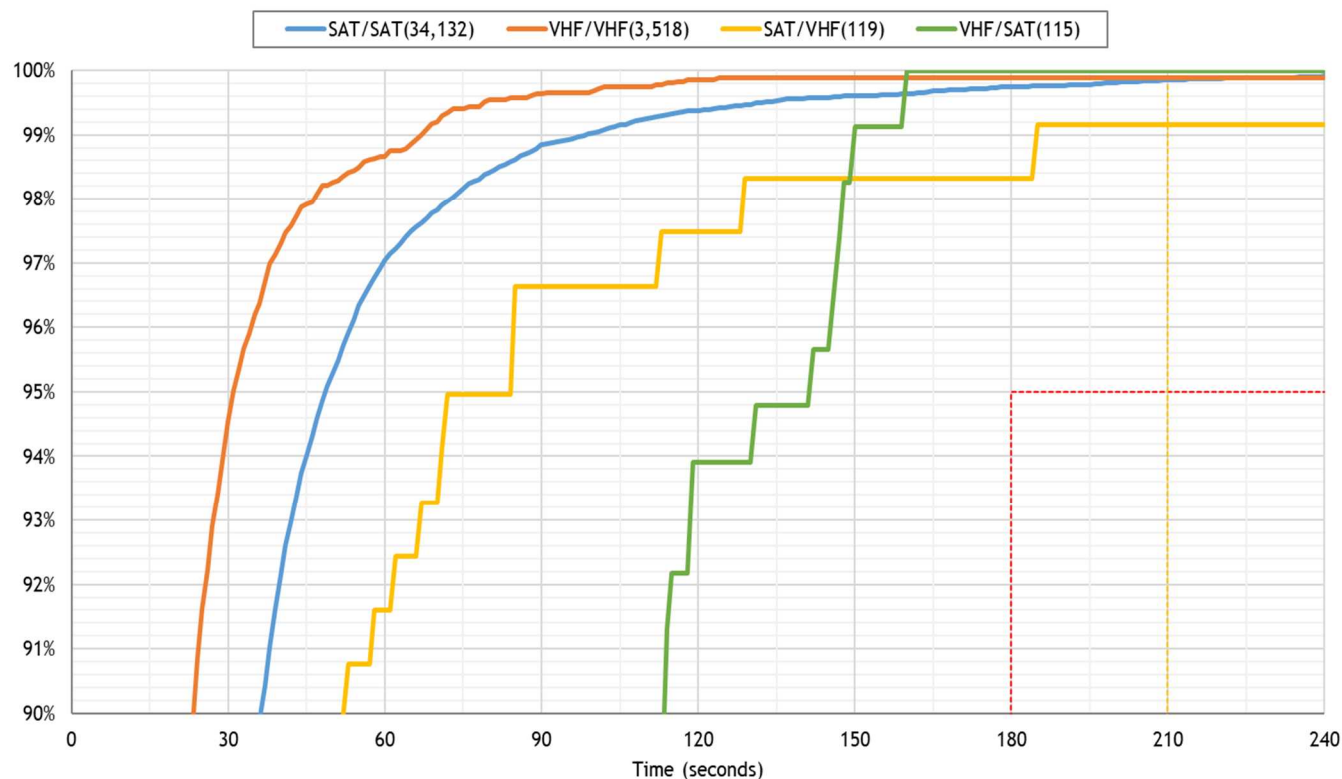
# ACP by Media Type

## Fukuoka FIR - By Media Type - January to June 2022 CPDLC Actual Communication Performance (ACP)

ACP measurement section



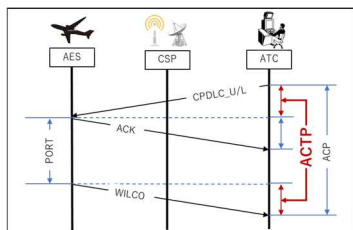
ACP : Total response time



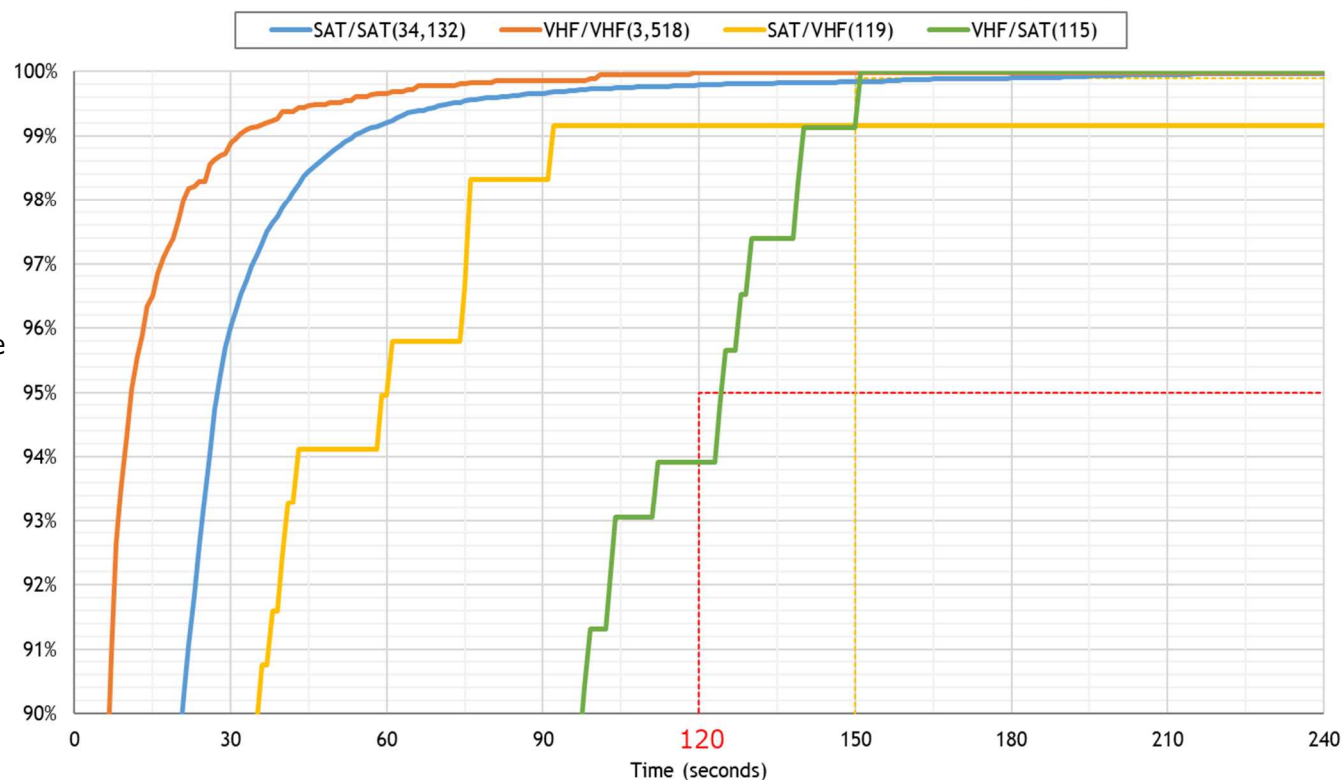
# ACTP by Media Type

## Fukuoka FIR - By Media Type - January to June 2022 CPDLC Actual Communication Technical Performance (ACTP)

ACTP measurement section



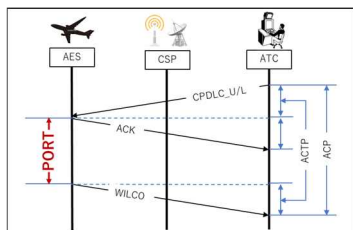
ACTP : Ground to air transmission time



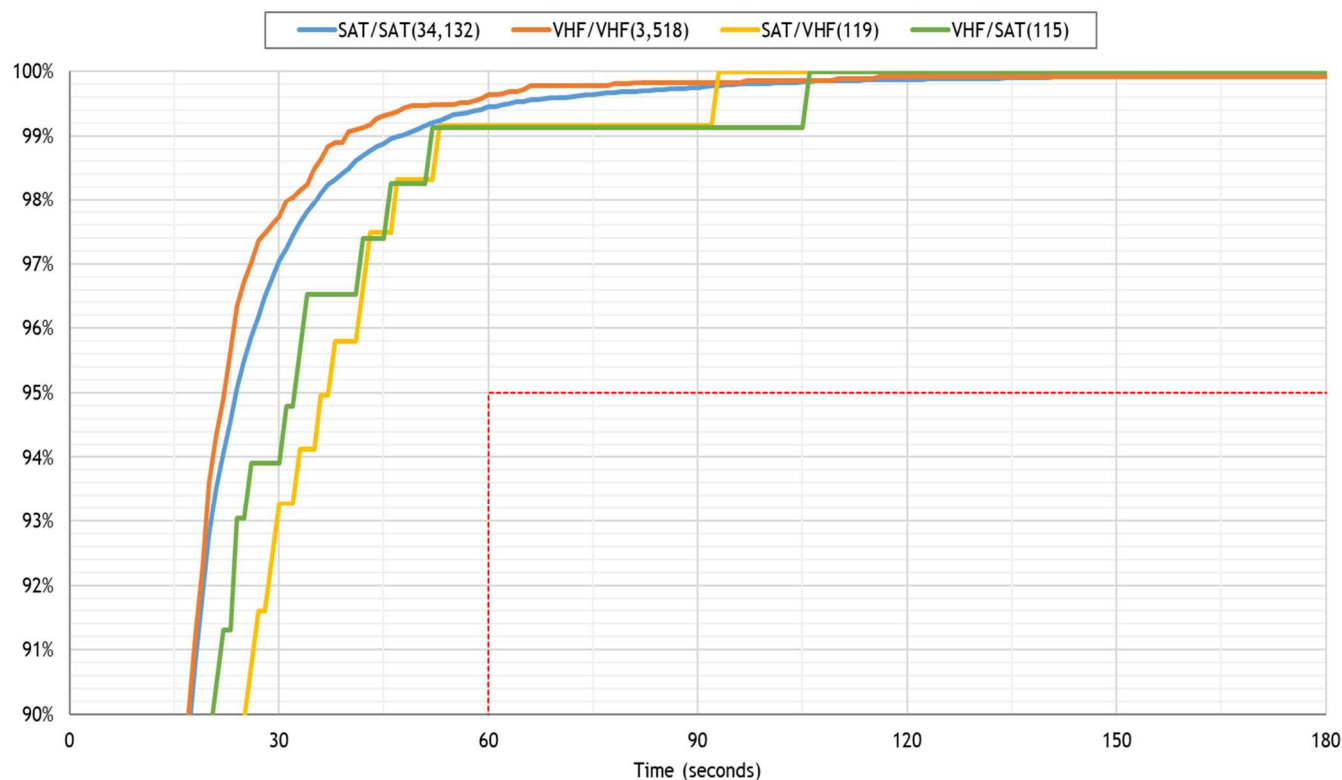
# PORT by Media Type

## Fukuoka FIR - By Media Type - January to June 2022 CPDLC Pilot Operational Response Time (PORT)

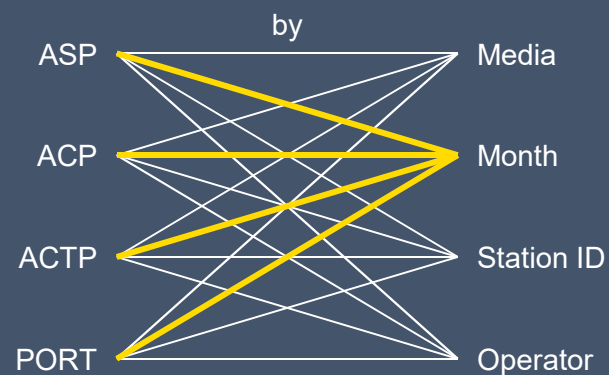
### PORT measurement section



PORT: pilot operational response time



## Performance by Month



# Observed Performance by Month

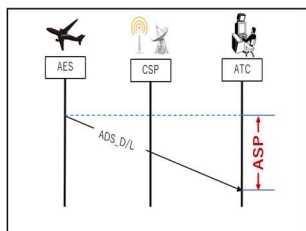
Month	RSP180			RCP240					
	Count of ADS-C	ASP		Count of CPDLC	ACP		ACTP		PORT
		95%	99.9%		95%	99.9%	95%	99.9%	95%
Jan	282,378	98.34%	99.66%	5,396	99.72%	99.85%	99.79%	99.88%	99.36%
Feb	239,336	98.35%	99.70%	4,587	99.71%	99.80%	99.76%	99.80%	99.47%
Mar	331,689	98.45%	99.63%	6,653	99.74%	99.83%	99.80%	99.83%	99.50%
Apr	308,074	98.57%	99.68%	6,412	99.75%	99.87%	99.70%	99.79%	99.31%
May	333,894	98.57%	99.65%	7,146	99.79%	99.87%	99.84%	99.87%	99.58%
Jun	348,417	98.58%	99.65%	7,690	99.76%	99.85%	99.77%	99.85%	99.50%
<div>Legend:</div> <div><div></div> Meets criteria</div> <div><div></div> Under criteria but above 99.0%</div> <div><div></div> Under criteria</div>									



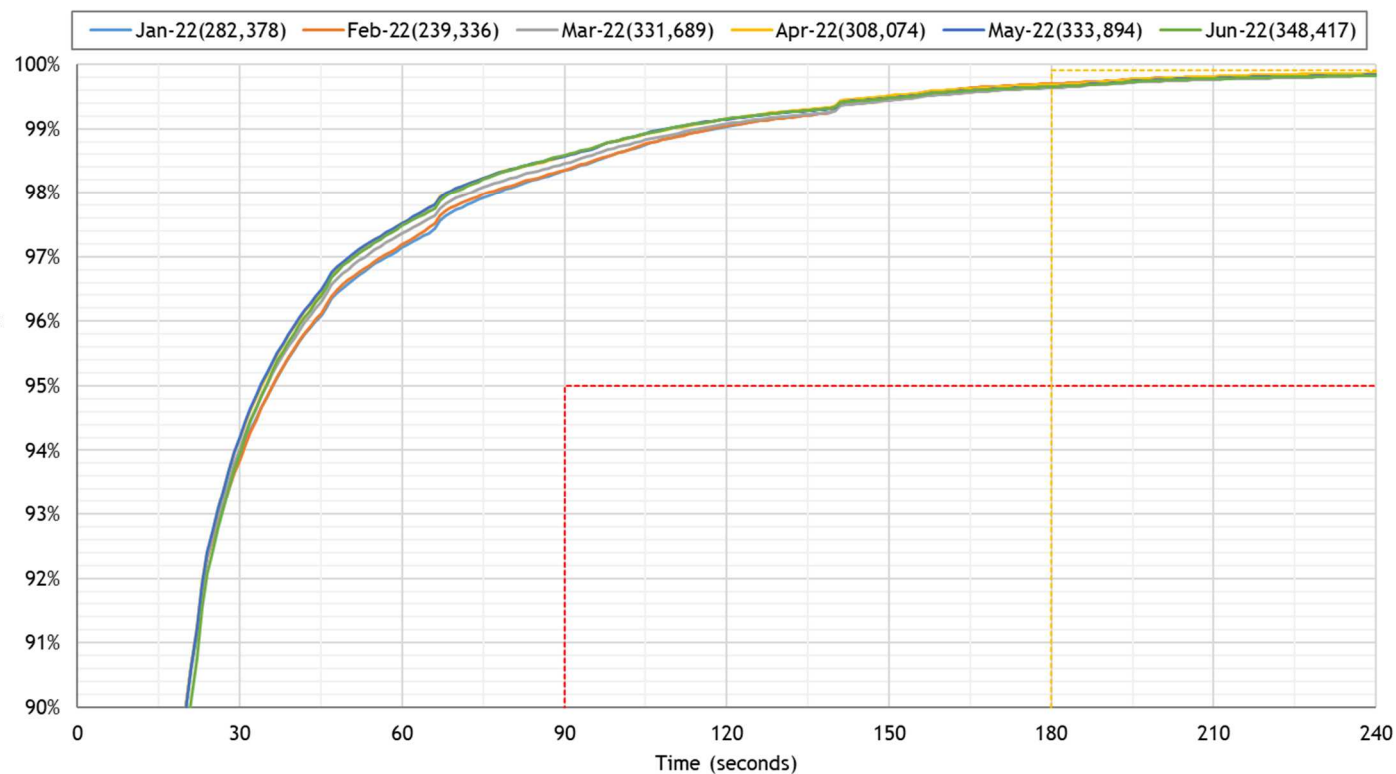
# ASP by Month

## Fukuoka FIR - By Month - January to June 2022 ADS-C Actual Surveillance Performance (ASP)

ASP measurement section



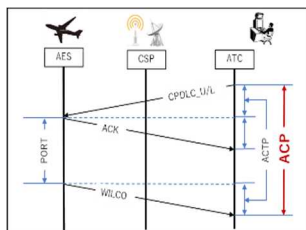
ASP: ADS Downlink transaction time



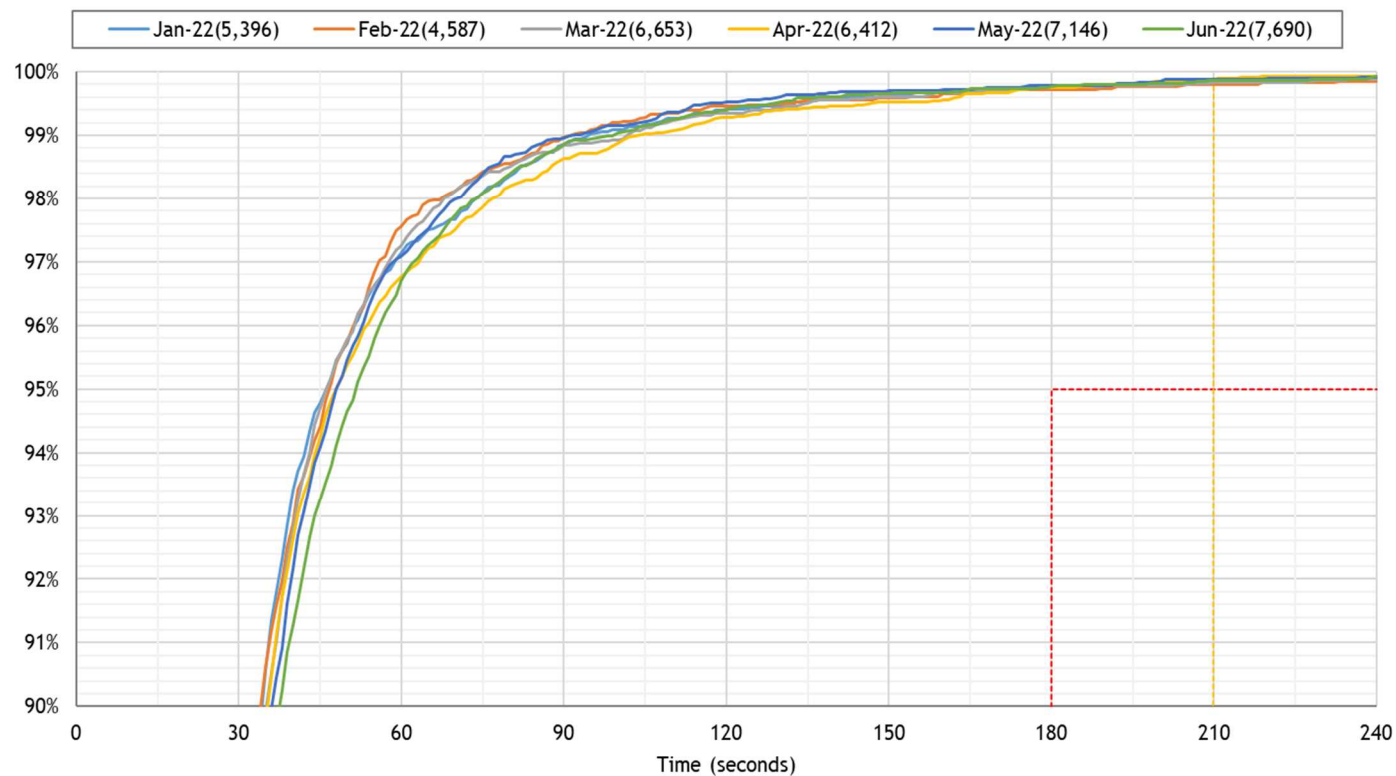
# ACP by Month

## Fukuoka FIR - By Month - January to June 2022 CPDLC Actual Communication Performance (ACP)

ACP measurement section



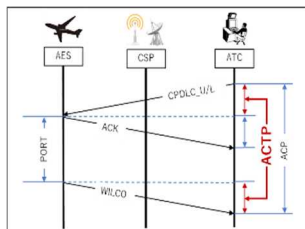
ACP : Total response time



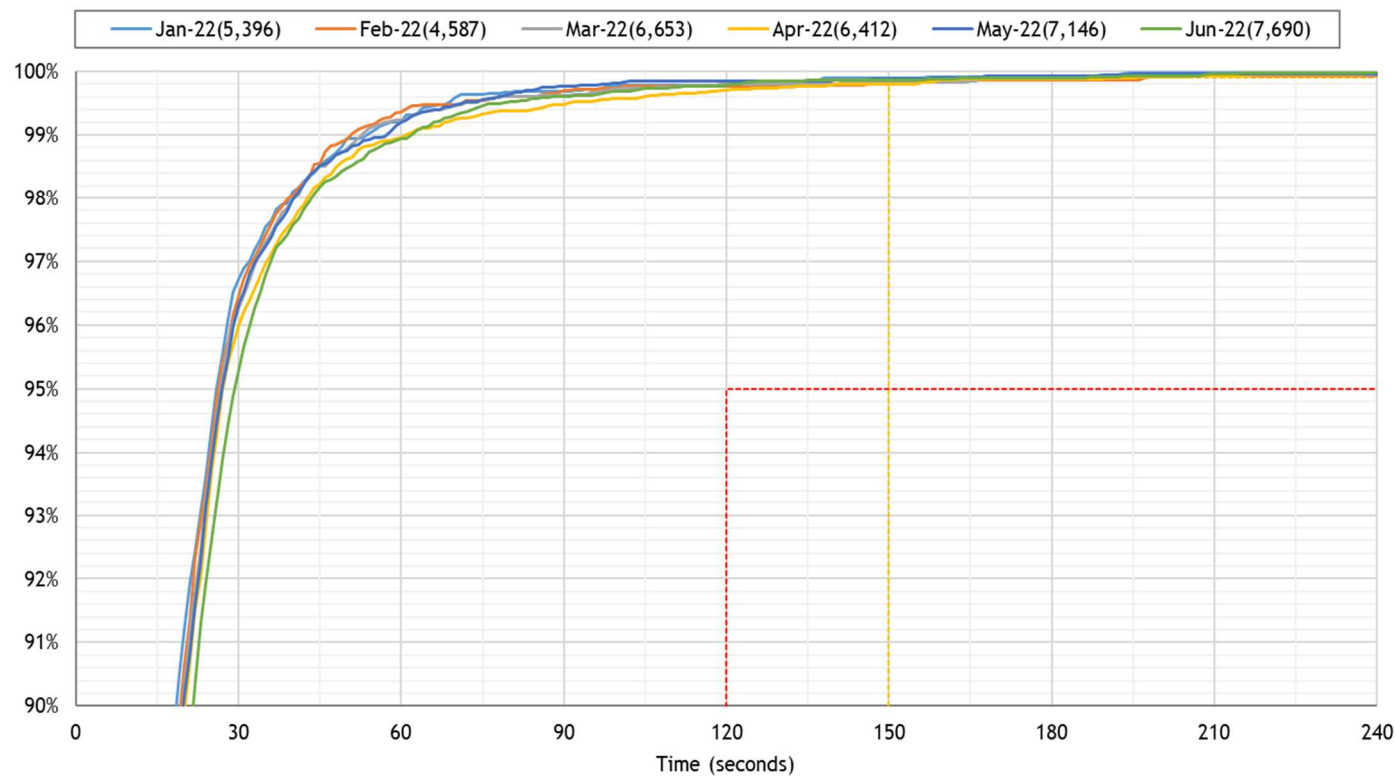
# ACTP by Month

## Fukuoka FIR - By Month - January to June 2022 CPDLC Actual Communication Technical Performance (ACTP)

ACTP measurement section



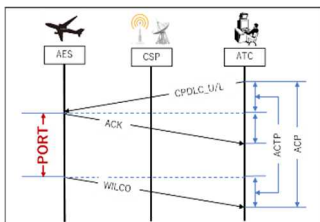
ACTP : Ground to air transmission time



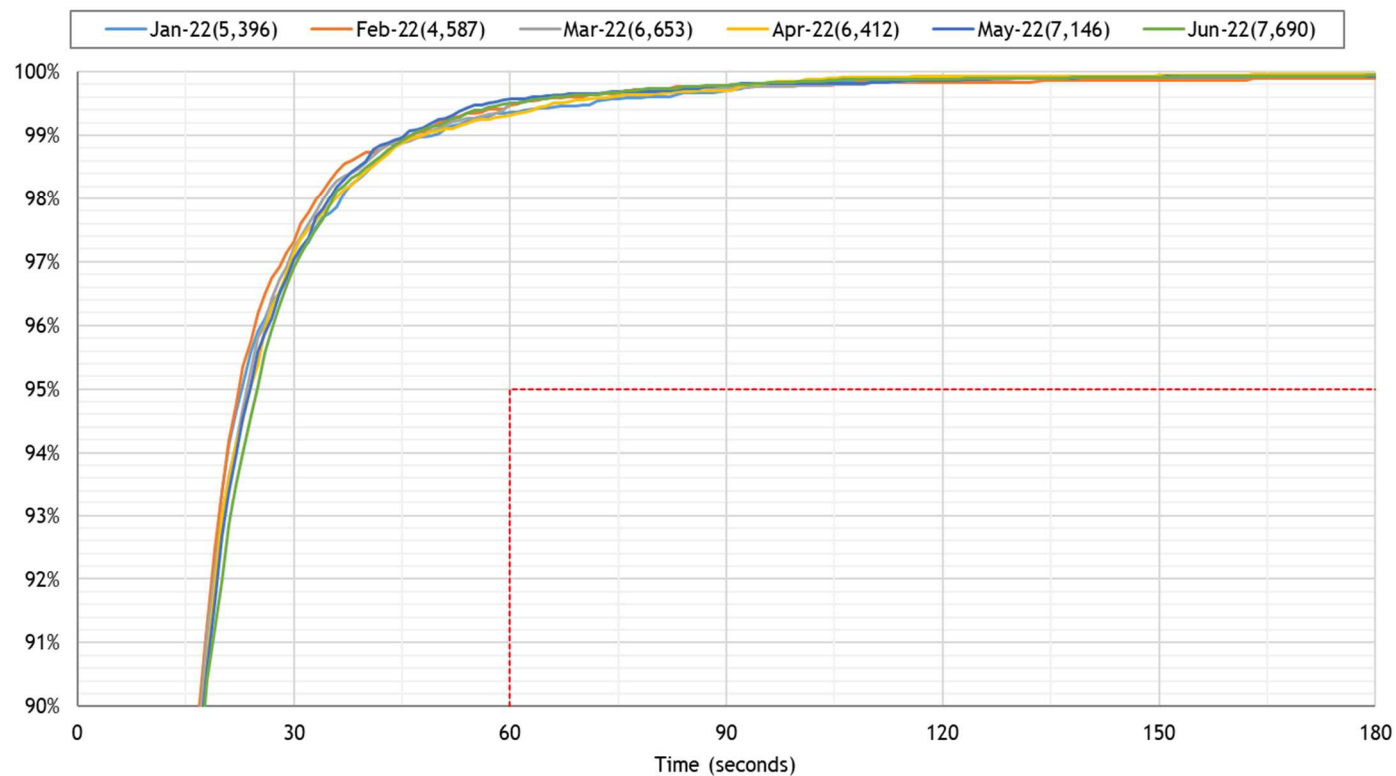
# PORT by Month

## Fukuoka FIR - By Month - January to June 2022 CPDLC Pilot Operational Response Time (PORT)

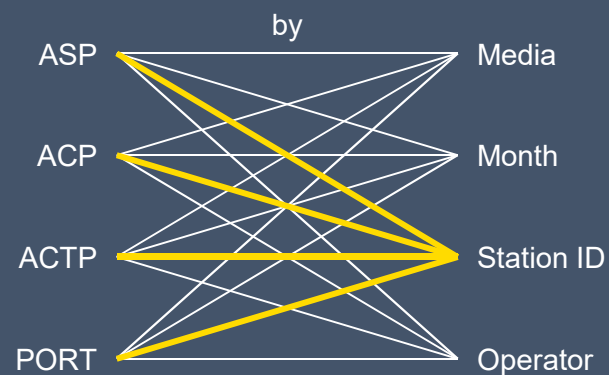
### PORT measurement section



PORT: pilot operational response time



## Performance by Station ID



# Observed Performance by Station ID

CSP	Service	Station ID	RSP180			RCP240					
			Count of ADS-C	ASP		Count of CPDLC	ACP		ACTP		PORT
				95%	99.9%		95%	99.9%	95%	99.9%	
SITA	Classic Aero(APAC)	APK1(Paumalu)	666,566	98.54%	99.71%	16,874	99.89%	99.94%	99.91%	99.91%	99.70%
		APK2(Perth)	41,387	97.32%	99.31%	1,016	99.60%	99.70%	99.60%	99.70%	99.70%
	SBB(APAC)	APK7(Paumalu)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		APK8(Paumalu)	31	100.00%	100.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		APK9(Paumalu)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
	SBB(MEAS)	MEA7(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		MEA8(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		MEA9(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
	Iridium	IGW1(Phoenix)	20,254	96.67%	99.37%	371	99.19%	100.00%	100.00%	100.00%	98.81%
ARINC	Classic Aero(APAC)	XXA(Paumalu)	438,270	98.54%	99.70%	10,129	99.81%	99.93%	99.81%	99.82%	97.61%
		XXP(Perth)	127,729	98.23%	99.51%	3,135	99.48%	99.61%	99.64%	99.68%	98.38%
		XXQ(Perth)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
	SBB(APAC)	XXS(Paumalu)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		X2P(Paumalu)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		X3P(Paumalu)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
	SBB(MEAS)	X1M(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		X2M(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
		XXM(Burum)	0	0.00%	0.00%	0	0.00%	0.00%	0.00%	0.00%	0.00%
	Iridium	IG1(Phoenix)	123,260	97.08%	99.22%	2,726	98.86%	99.26%	99.08%	99.59%	99.71%
<div> <div>*No-colored where under 100 data points.</div> <div> <div>Legend:</div> <div> <div>Meets criteria</div> <div>Under criteria but above 99.0%</div> <div>Under criteria</div> </div> </div> </div>											

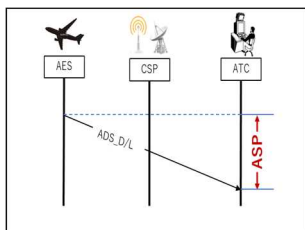
# Observed Performance by Station ID

CSP	Service	Station ID	RSP180		RCP240			
			Count of ADS-C	ASP	Count of CPDLC	ACP	ACTP	PORT
				95% (<90sec)		95% (<180sec)	95% (<120sec)	95% (<60sec)
SITA	Classic Aero(APAC)	APK1(Paumalu)	666,566	35sec	16,874	41sec	18sec	28sec
		APK2(Perth)	41,387	25sec	1,016	84sec	31sec	57sec
	SBB(APAC)	APK7(Paumalu)	0	-	0	-	-	-
		APK8(Paumalu)	31	62sec	0	-	-	-
		APK9(Paumalu)	0	-	0	-	-	-
	SBB(MEAS)	MEA7(Burum)	0	-	0	-	-	-
		MEA8(Burum)	0	-	0	-	-	-
		MEA9(Burum)	0	-	0	-	-	-
	Iridium	IGW1(Phoenix)	20,254	68sec	371	101sec	56sec	56sec
ARINC	Classic Aero(APAC)	XXA(Paumalu)	438,270	28sec	10,129	50sec	23sec	33sec
		XXP(Perth)	127,729	35sec	3,135	68sec	27sec	45sec
		XXQ(Perth)	0	-	0	-	-	-
	SBB(APAC)	XXS(Paumalu)	0	-	0	-	-	-
		X2P(Paumalu)	0	-	0	-	-	-
		X3P(Paumalu)	0	-	0	-	-	-
	SBB(MEAS)	X1M(Burum)	0	-	0	-	-	-
		X2M(Burum)	0	-	0	-	-	-
		XXM(Burum)	0	-	0	-	-	-
	Iridium	IG1(Phoenix)	123,260	66sec	2,726	124sec	71sec	56sec
*No-colored where under 100 data points.			Legend: <span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Meets criteria <span style="display: inline-block; width: 15px; height: 10px; background-color: #f8d7da; border: 1px solid #f5c6cb; margin-right: 5px;"></span> Under criteria					

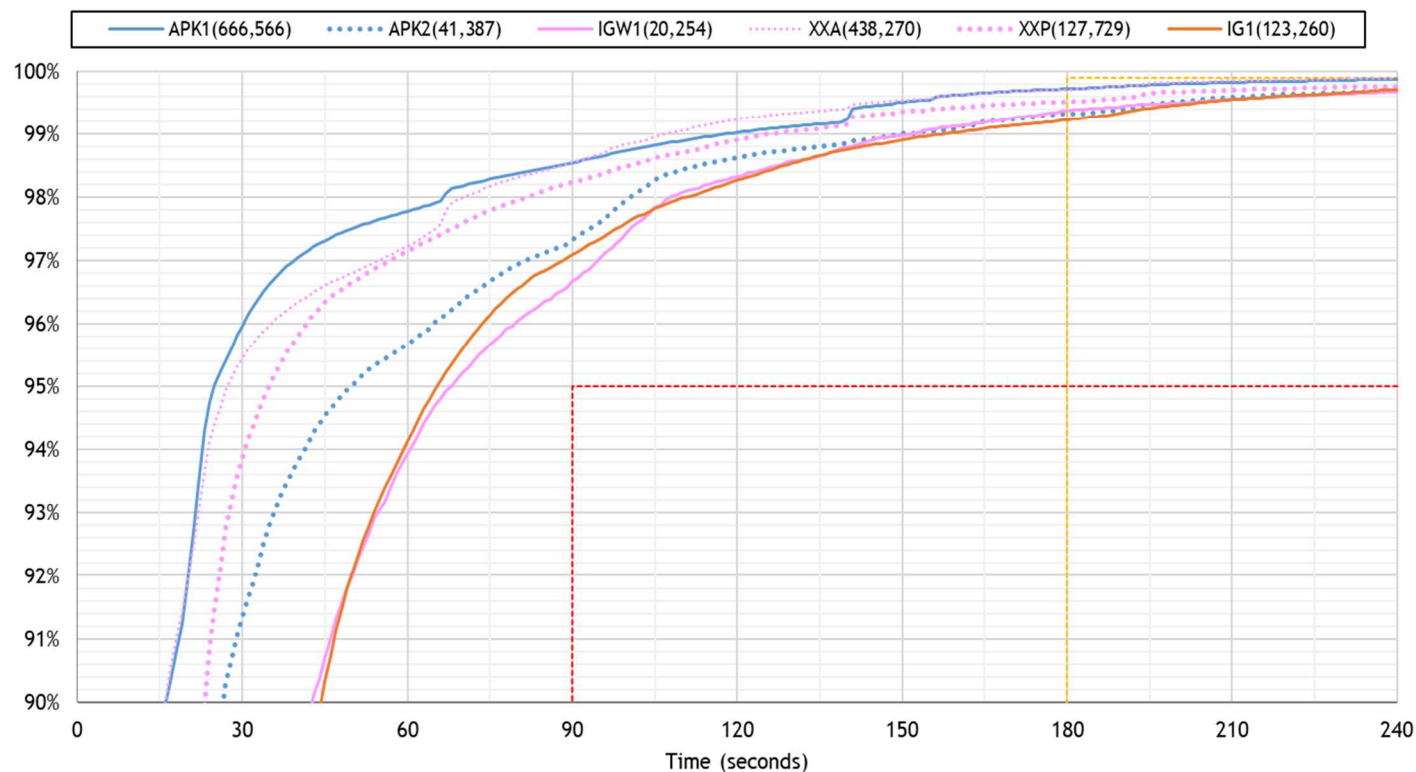
# ASP by Station ID

## Fukuoka FIR - By Station Identifier - January to June 2022 ADS-C Actual Surveillance Performance (ASP)

### ASP measurement section



ASP:ADS Downlink transaction time



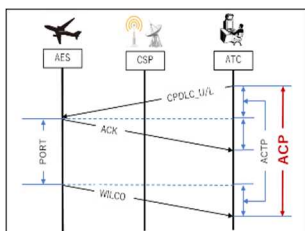
**\*Not displayed for ground stations with less than 100 messages**



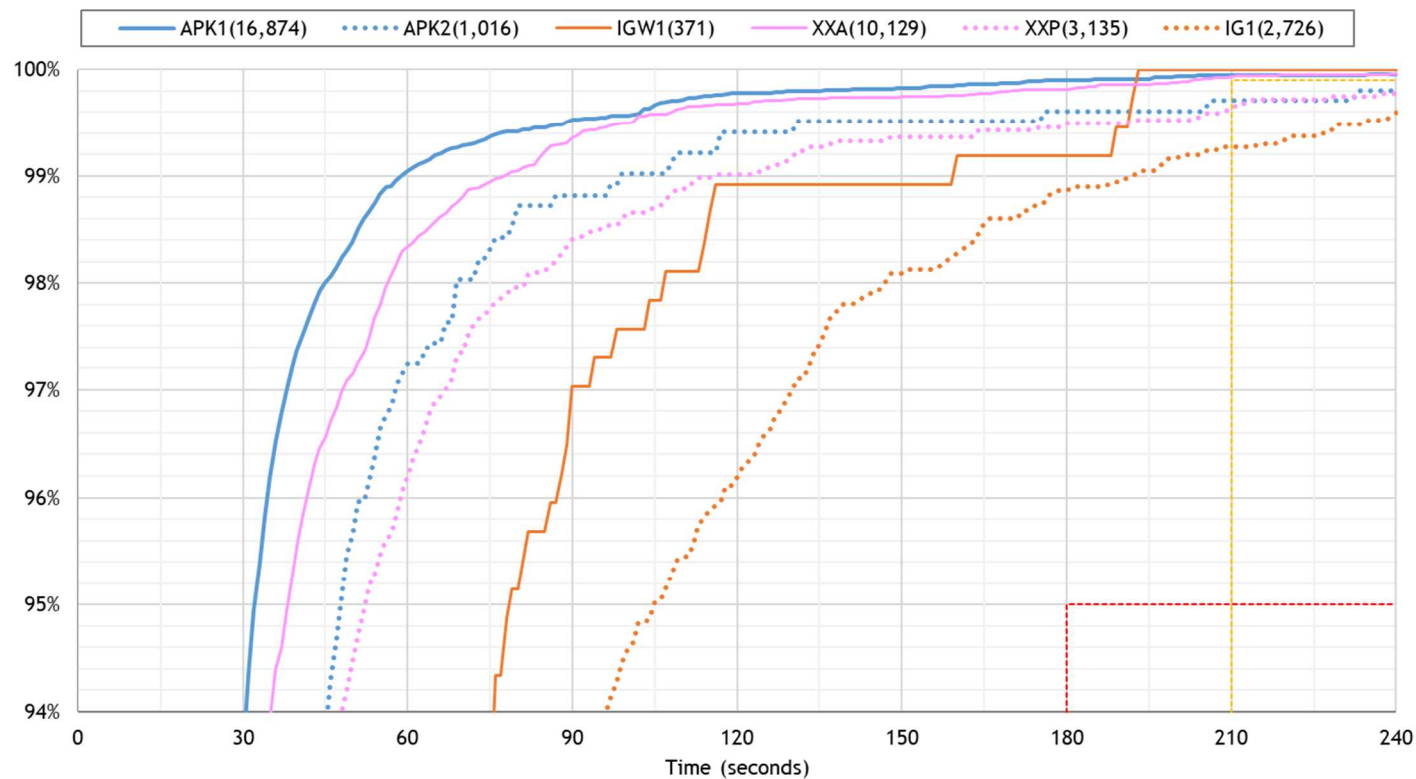
# ACP by Station ID

## Fukuoka FIR - By Station Identifier - January to June 2022 CPDLC Actual Communication Performance (ACP)

ACP measurement section



ACP : Total response time

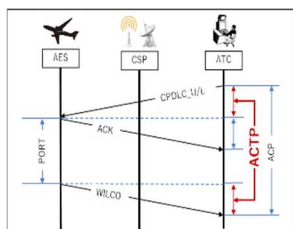


\*Not displayed for ground stations with less than 100 messages

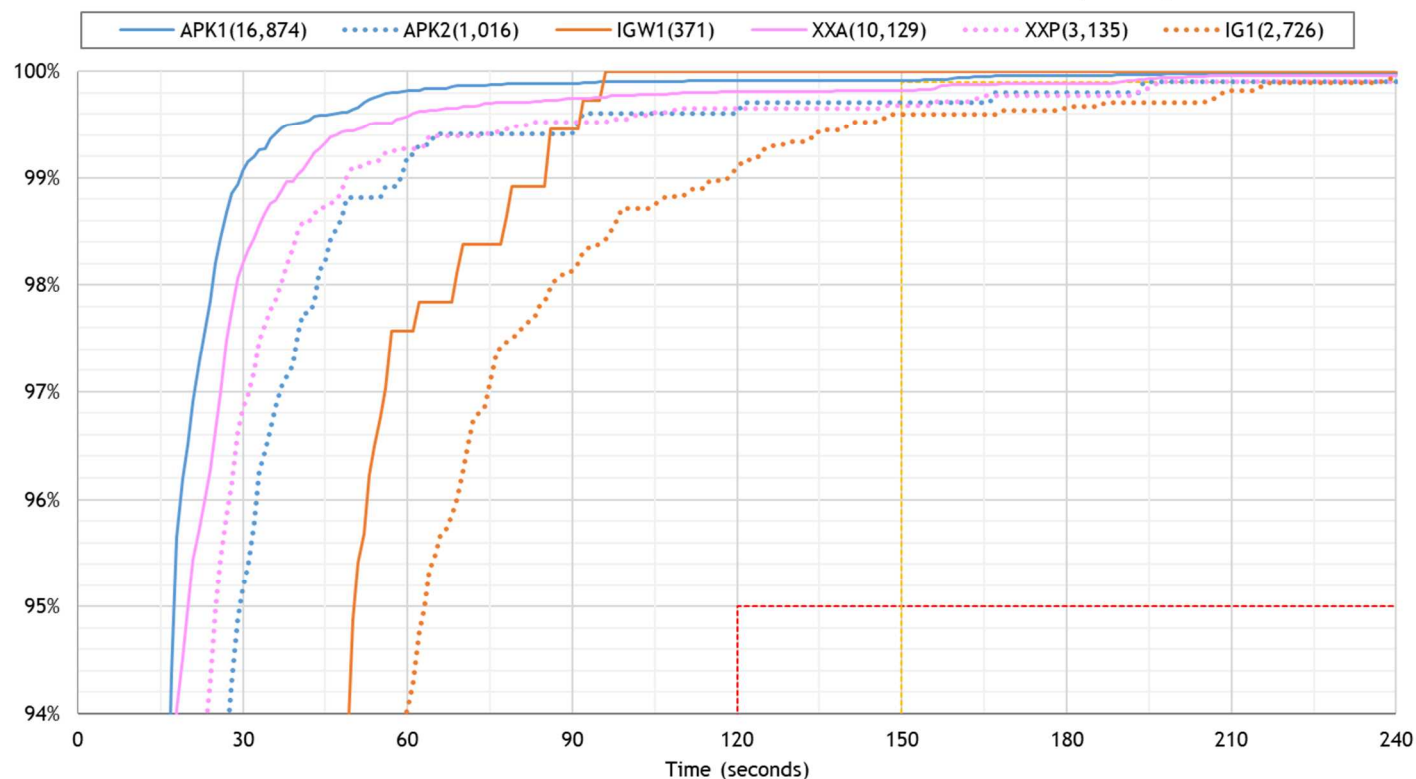
# ACTP by Station ID

## Fukuoka FIR - By Station Identifier - January to June 2022 CPDLC Actual Communication Technical Performance (ACTP)

ACTP measurement section



ACTP : Ground to air transmission time



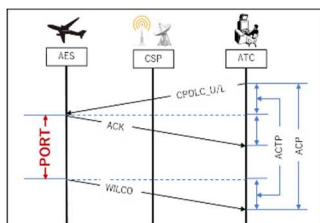
**\*Not displayed for ground stations with less than 100 messages**

# PORT by Station ID

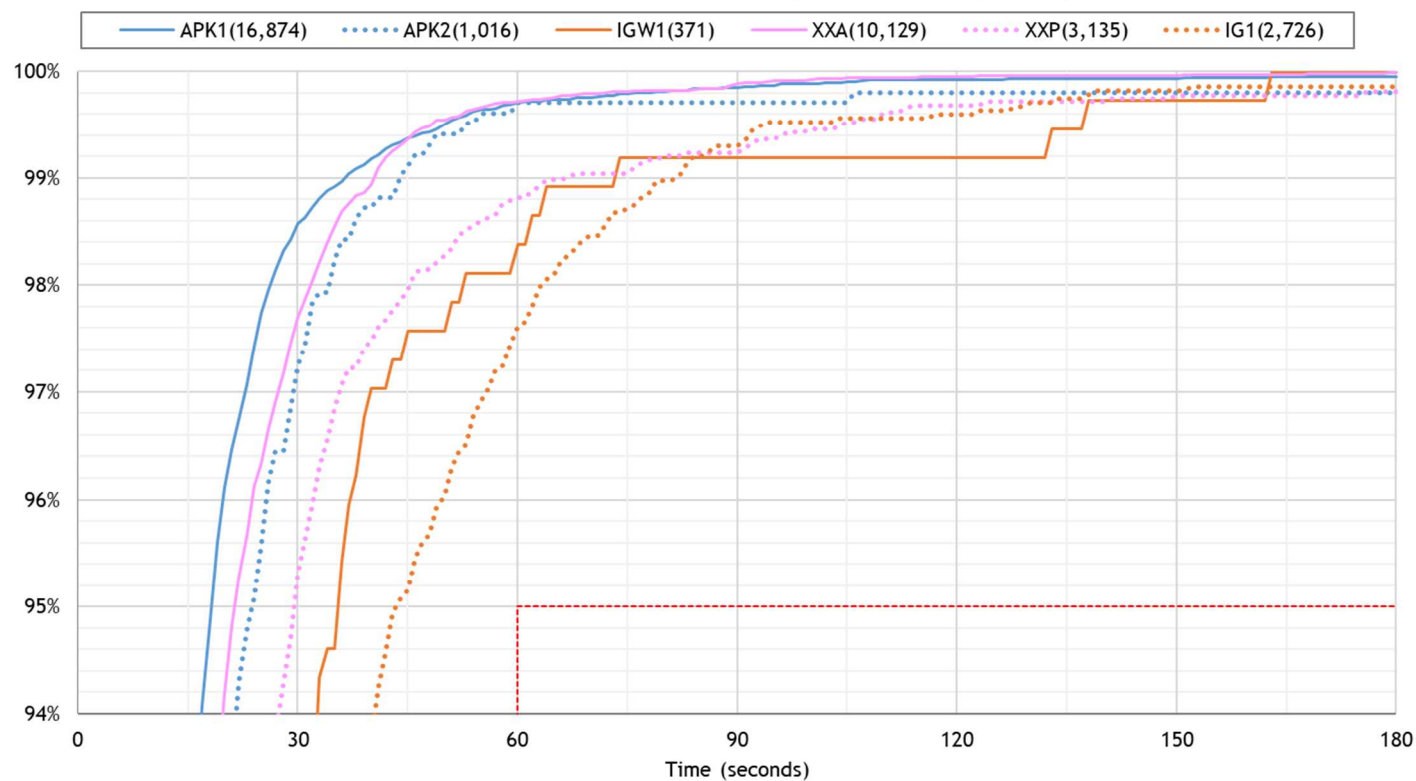
## Fukuoka FIR - By Station Identifier - January to June 2022

CPDLC Pilot Operational Response Time (PORT)

PORT measurement section



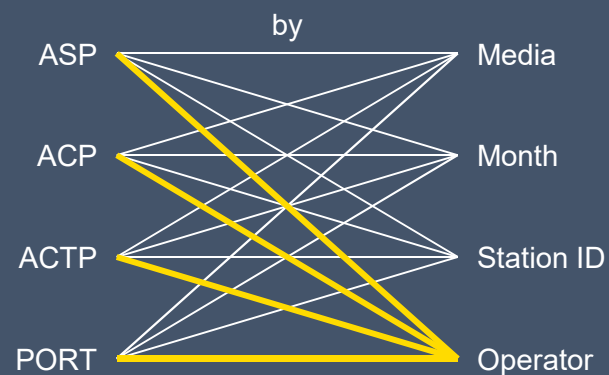
PORT: pilot operational response time



**\*Not displayed for ground stations with less than 100 messages**

## Performance by Operator

Table only, Percentile graph not contained



# Summary of Performance by Operator

- ◆ 59 operators with at least 100 ADS-C messages
  - All operator meets ASP95% criteria\*<sup>1</sup>.
  - 5 operators were below 99.0% at ASP99.9% criteria.
- ◆ 29 operators with at least 100 RCP transactions
  - All operator meets ACP95% criteria\*<sup>2</sup>.
  - 1 operator was below 99.0% at ACP99.9% criteria.

	RSP180		RCP240				
	ASP		ACP		ACTP		PORT
	95%	99.9%	95%	99.9%	95%	99.9%	95%
Meets Criteria	59	14	29	17	29	14	29
Under criteria but above 99.0%		40		11		14	
Under criteria	0	5	0	1	0	1	0

\*1 ASP95% criteria: The ASP value of 95% of the entire ADS-C downlink must be within 90 seconds.

\*2 ACP95% criteria: The ACP value of 95% of the entire CPDLC communication with response request must be within 180 seconds.

# Summary of Performance by Operator/AC-Type

- ◆ 153 operator/AC-type pairs with at least 100 ADS-C messages
  - 6 pairs not meet ASP95% criteria\*1.
  - 18 pairs were below 99.0% at ASP99.9% criteria.
- ◆ 68 operator/AC-type pairs with at least 100 RCP transactions
  - All operator meets ACP95% criteria\*2.
  - 3 pairs were below 99.0% at ACP99.9% criteria.

	RSP180		RCP240				
	ASP		ACP		ACTP		PORT
	95%	99.9%	95%	99.9%	95%	99.9%	95%
Meets Criteria	147	52	68	51	68	43	68
Under criteria but above 99.0%		83		14		24	
Under criteria	6	18	0	3	0	1	0

\*1 ASP95% criteria: The ASP value of 95% of the entire ADS-C downlink must be within 90 seconds.

\*2 ACP95% criteria: The ACP value of 95% of the entire CPDLC communication with response request must be within 180 seconds.

# Operator/AC-Type Not Meeting RSP180/RCP240

Aircraft Type	OP Code	RSP180				RCP240						
		Count of ADS-C	% of Total ADS-C	ASP		Count of CPDLC	% of Total CPDLC	ACP		ACTP		PORT
				95%	99.9%			95%	99.9%	95%	99.9%	
A321	PAL	1,485	0.08%	97.04%	98.05%	31	0.08%	96.77%	96.77%	96.77%	96.77%	100.00%
B737	KAL	204	0.01%	95.10%	97.55%	5	0.01%	60.00%	80.00%	60.00%	100.00%	60.00%
B744	CKS	49,642	2.69%	96.60%	98.98%	711	1.88%	98.59%	99.30%	99.02%	99.58%	95.78%
B744	CPA	322	0.02%	91.93%	95.96%	7	0.02%	85.71%	85.71%	85.71%	85.71%	85.71%
B748	CPA	15,928	0.86%	97.72%	99.30%	335	0.88%	98.21%	98.81%	97.61%	98.51%	99.40%
B763	ANA	11,059	0.60%	96.27%	98.62%	230	0.61%	99.57%	99.57%	99.13%	99.57%	99.57%
B763	JAL	34,635	1.88%	97.18%	98.92%	809	2.14%	100.00%	100.00%	100.00%	100.00%	99.38%
B763	OAE	5,535	0.30%	99.10%	99.87%	138	0.36%	98.55%	98.55%	99.28%	99.28%	97.83%
B772	UAL	4,528	0.25%	97.55%	98.90%	119	0.31%	100.00%	100.00%	100.00%	100.00%	99.16%
B77L	CKS	6,966	0.38%	96.71%	98.82%	105	0.28%	100.00%	100.00%	100.00%	100.00%	99.05%
B77L	EVA	35,430	1.92%	99.76%	99.92%	901	2.38%	100.00%	100.00%	100.00%	100.00%	99.67%
B77W	GIA	562	0.03%	93.77%	96.26%	11	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%
B788	CXA	418	0.02%	94.74%	98.33%	10	0.03%	100.00%	100.00%	100.00%	100.00%	100.00%
B789	ETH	112	0.01%	93.75%	100.00%	3	0.01%	100.00%	100.00%	100.00%	100.00%	100.00%
B78X	SIA	5,824	0.32%	94.20%	99.91%	99	0.26%	100.00%	100.00%	100.00%	100.00%	100.00%
C17	RCH	8,856	0.48%	99.11%	99.51%	204	0.54%	98.04%	98.04%	99.51%	99.51%	95.59%
GL7T	CPJ	334	0.02%	94.01%	97.60%	5	0.01%	100.00%	100.00%	100.00%	100.00%	100.00%
GL7T	VJT	649	0.04%	95.53%	98.15%	6	0.02%	100.00%	100.00%	100.00%	100.00%	100.00%
GLEX	RKS	574	0.03%	97.21%	98.61%	16	0.04%	100.00%	100.00%	100.00%	100.00%	100.00%
GLF5	EJM	153	0.01%	96.08%	96.73%	1	0.00%	100.00%	100.00%	100.00%	100.00%	100.00%
GLF5	TWY	177	0.01%	98.31%	98.87%	4	0.01%	100.00%	100.00%	100.00%	100.00%	100.00%
GLF6	TWY	182	0.01%	96.15%	98.35%	3	0.01%	100.00%	100.00%	100.00%	100.00%	100.00%
K35R	RCH	1,271	0.07%	97.56%	98.11%	25	0.07%	96.00%	96.00%	92.00%	92.00%	100.00%
MD11	UPS	6,803	0.37%	95.97%	98.69%	91	0.24%	100.00%	100.00%	100.00%	100.00%	100.00%

\*No-colored where under 100 data points.

Legend:  Meets criteria  
 Under criteria but above 99.0%  
 Under criteria

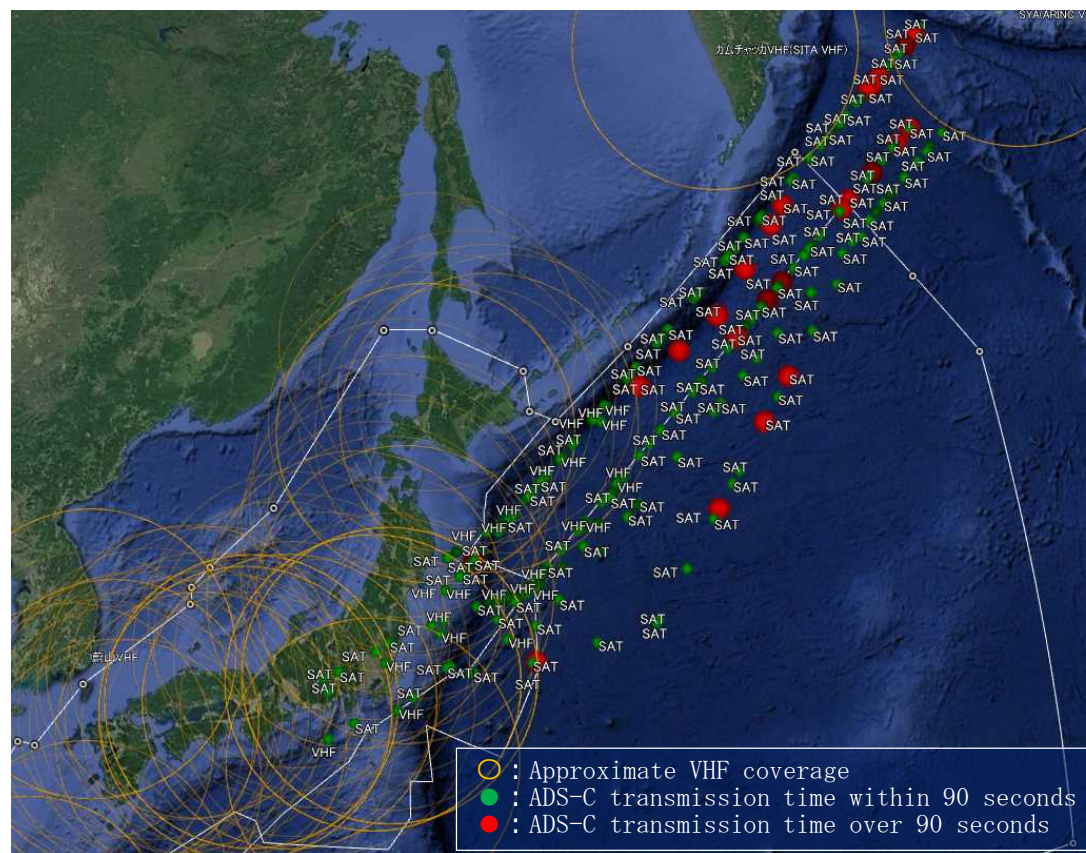
6 pairs not meet ASP95% criteria  
(detailed information in [slide 31 - 36](#))



# B744/CPA Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	B744/CPA
Installed media (FLP Section10)	J2 (HFDL) J3 (VDL ModeA) J5 (Inmarsat) )

	ASP95%
Jan 2022	99.00%(Count of ADS-C 100)
Feb 2022	No Flight
Mar 2022	No Flight
Apr 2022	No Flight
May 2022	No Flight
Jun 2022	88.74%(Count of ADS-C 222)



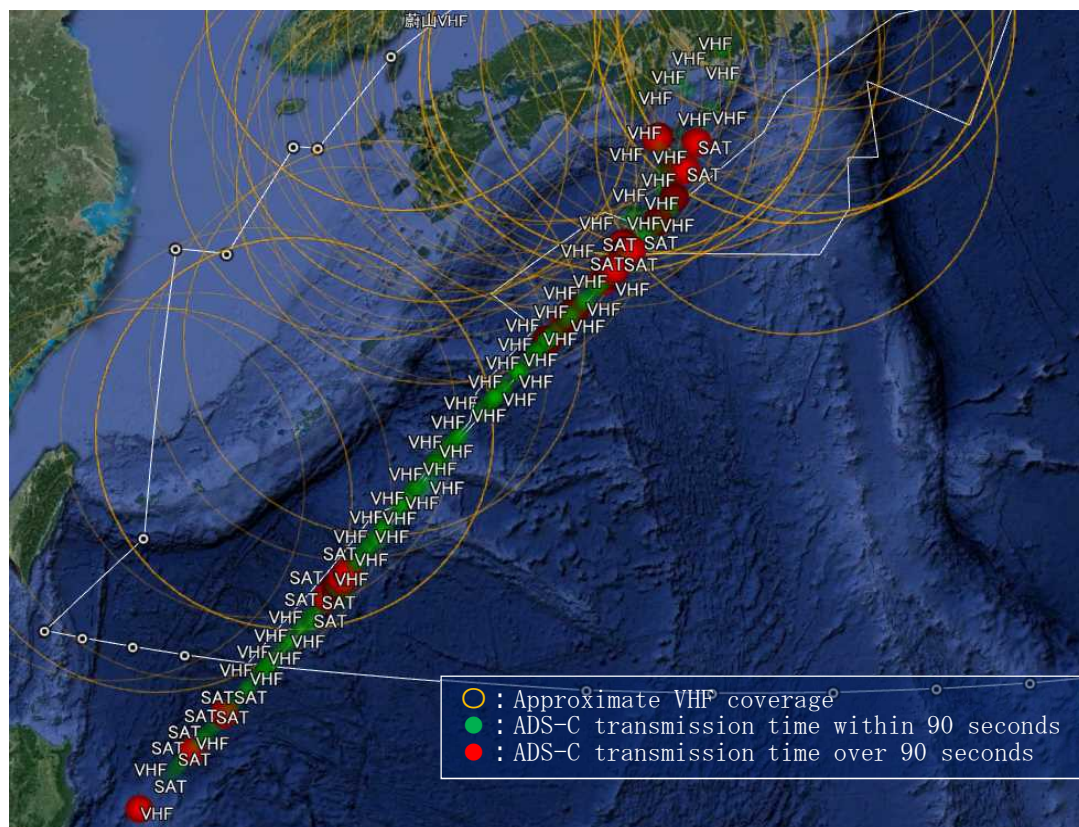
Jan - Jun 2022 B744/CPA plot diagram



# B77W/GIA Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	B77W/GIA
Installed media (FLP Section10)	J4 (VDL Mode2) J5 (Inmarsat)

	ASP95%
Jan 2022	93.60%(Count of ADS-C 125)
Feb 2022	96.49%(Count of ADS-C 57)
Mar 2022	95.92%(Count of ADS-C 49)
Apr 2022	90.38%(Count of ADS-C 156)
May 2022	95.43%(Count of ADS-C 175)
Jun 2022	No Flight

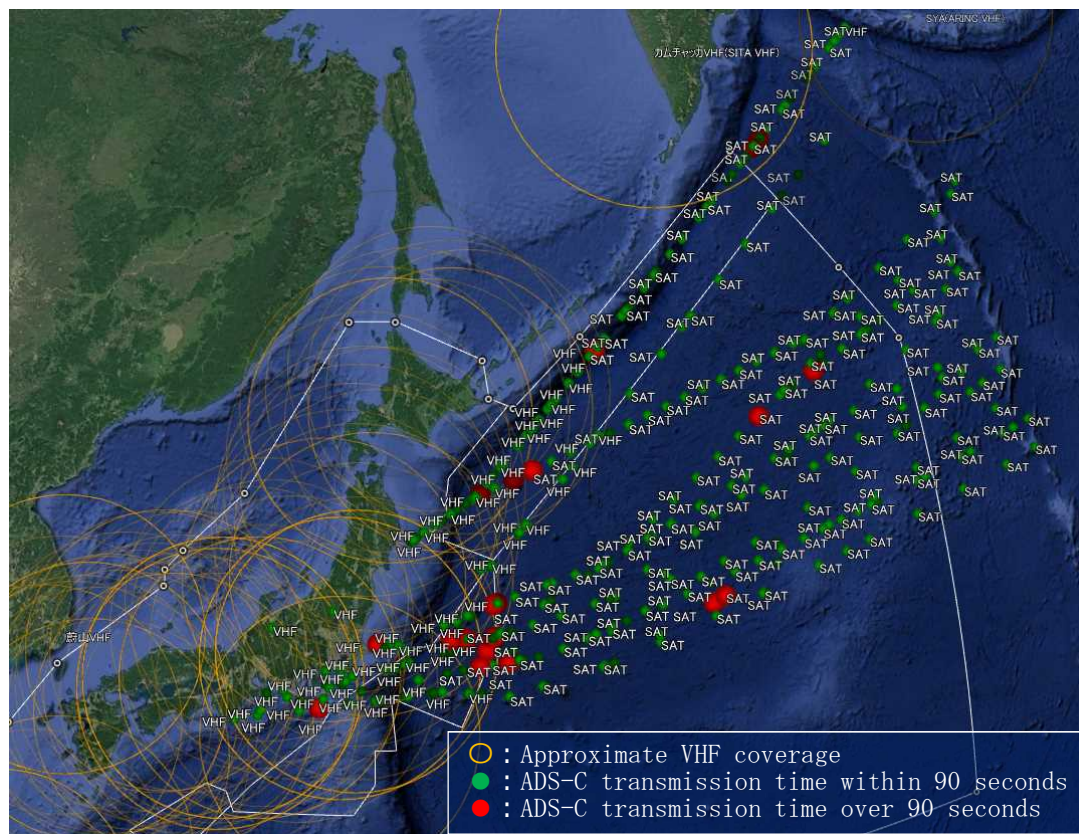


Jan - Jun 2022 B77W/GIA plot diagram

# B788/CXA Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	B788/CXA
Installed media (FLP Section10)	J2 (HFDL) J4 (VDL Mode2) J5 (Inmarsat) )

	ASP95%
Jan 2022	No Flight
Feb 2022	No Flight
Mar 2022	No Flight
Apr 2022	97.03%(Count of ADS-C 101)
May 2022	92.80%(Count of ADS-C 125)
Jun 2022	94.97%(Count of ADS-C 199)



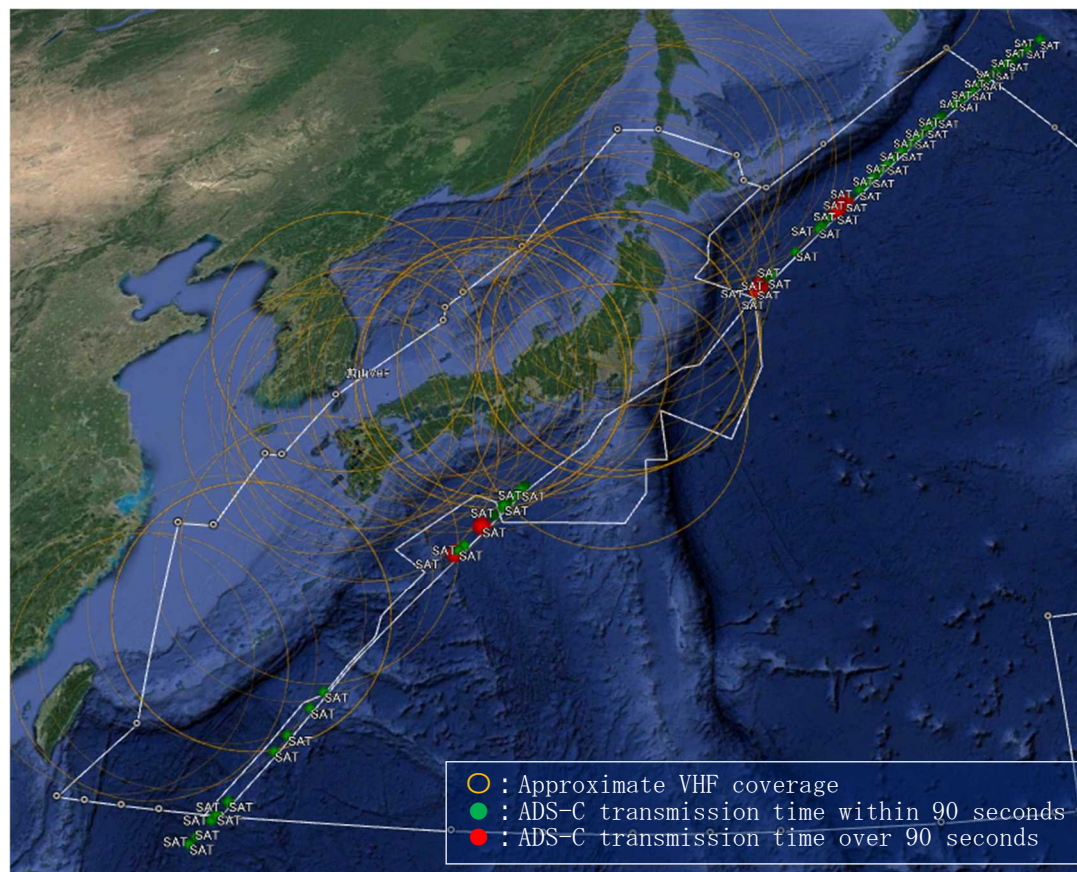
Jan - Jun 2022 B788/CXA plot diagram



# B789/ETH Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	B789/ETH
Installed media (FLP Section10)	J2 (HFDL) J3 (VDL ModeA) J4 (VDL Mode2) J5 (Inmarsat) J7 (Iridium)

	ASP95%
Jan 2022	92.86%(Count of ADS-C 70)
Feb 2022	92.86%(Count of ADS-C 28)
Mar 2022	No Flight
Apr 2022	No Flight
May 2022	100.00%(Count of ADS-C 14)
Jun 2022	No Flight

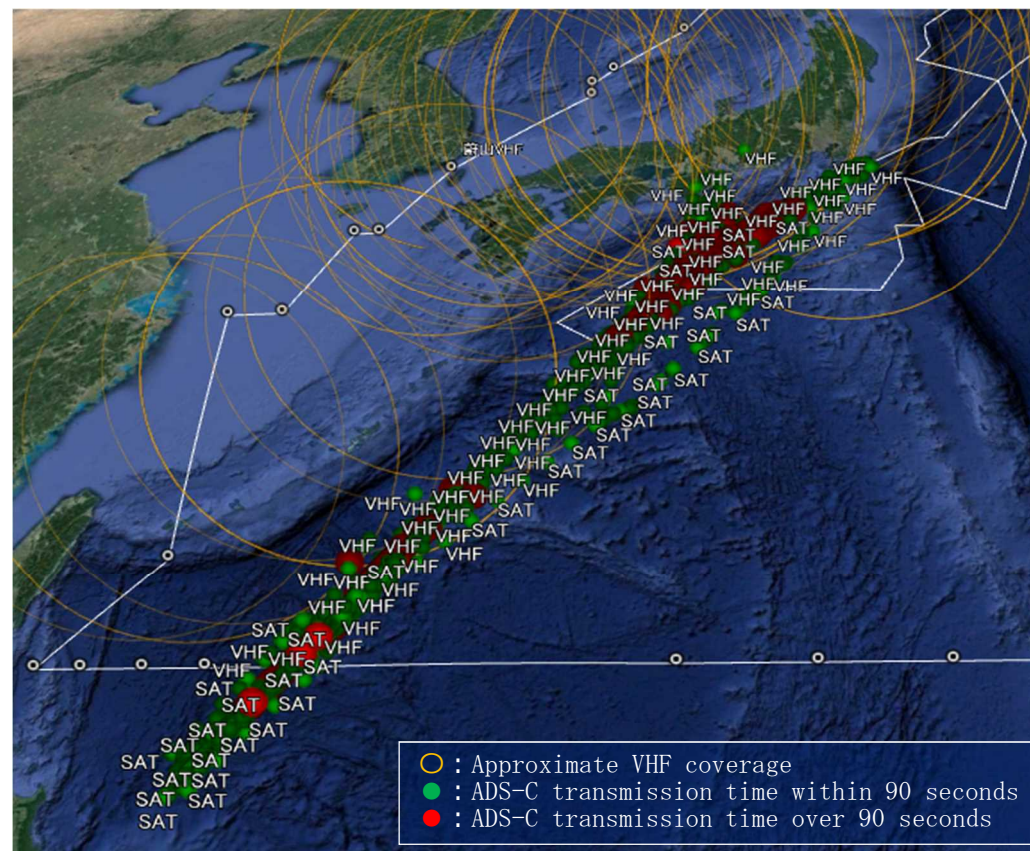


Jan - Jun 2022 B789/ETH plot diagram

# B78X/SIA Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	B78X/SIA
Installed media (FLP Section10)	J3 (VDL ModeA) J5 (Inmarsat)

	ASP95%
Jan 2022	93.66%(Count of ADS-C 1,246)
Feb 2022	93.32%(Count of ADS-C 973)
Mar 2022	94.08%(Count of ADS-C 1,039)
Apr 2022	92.25%(Count of ADS-C 619)
May 2022	95.24%(Count of ADS-C 1,009)
Jun 2022	95.31%(Count of ADS-C 938)



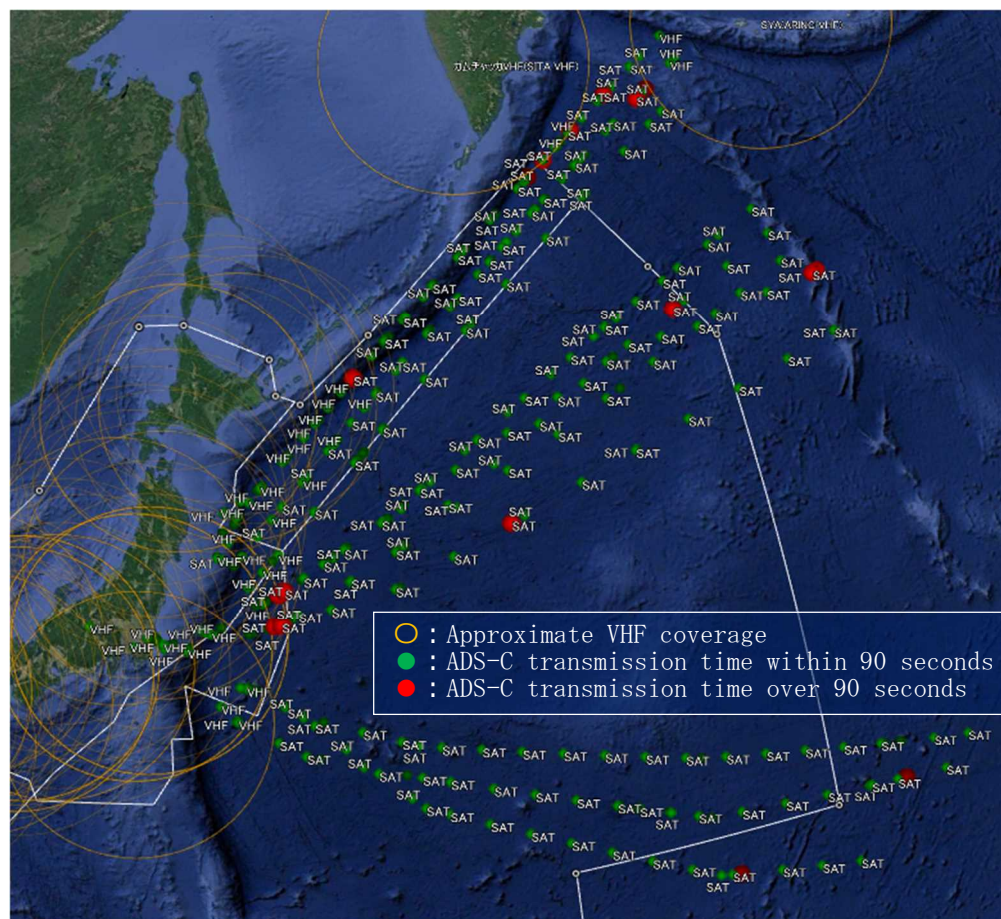
Jan - Jun 2022 B78X/SIA plot diagram



# GL7T/CPJ Detailed investigation

Investigation period	Jan - Jun 2022
Aircraft information	GL7T/CPJ
Installed media (FLP Section10)	J4 (VDL Mode2) J7 (Iridium)

	ASP95%
Jan 2022	93.55%(Count of ADS-C 62)
Feb 2022	No Flight
Mar 2022	94.94%(Count of ADS-C 79)
Apr 2022	94.17%(Count of ADS-C 120)
May 2022	93.15%(Count of ADS-C 73)
Jun 2022	No Flight



Jan - Jun 2022 GL7T/CPJ plot diagram

# Any Questions?

## Thank you!



Technical Management  
Center



Network Performance  
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