



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

DATA LINK PERFORMANCE REPORT FOR SINGAPORE FIR

(Presented by Singapore)

SUMMARY

This paper presents data link performance data for Singapore FIR for 2019.

1. INTRODUCTION

1.1 This paper presents the data link performance for Singapore (WSJC) FIR from January to December 2019. This performance report is based on the Performance-Based Communications and Surveillance (PBCS) performance monitoring analysis reporting format.

1.2 The overall performance observed in 2019 against both RCP240 and RSP180 specifications is acceptable. Problem reports were raised against the small number of aircraft that did not meet the specifications while RGS/GES availability was mainly affected by time taken for aircraft avionics to transit between different media.

2. DISCUSSION

2.1 PBCS has been implemented within WSJC FIR with effect from 29 March 2018. Using the monitoring report format sent out by ICAO on March 2019, Singapore has submitted the data link post-implementation performance report for 2019 (listed in **Appendix A**) to ICAO APAC office on 30th March 2020.

2.2 In summary, CPDLC performance by SATCOM and VHF were able to meet the 95% criterion but failed for 99.9% criterion as shown in Table 1 below. Although the assessment for CPDLC performance by HF was not statistically significant due to the low number of data points, Singapore had reminded the airline operators to use SATCOM and VHF in WSJC FIR.

Period	Jan - Jun 2019					Jul - Dec 2019				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95%		99.9%		Message Counts	95%		99.9%	
		ACP	ACTP	ACP	ACTP		ACP	ACTP	ACP	ACTP
		% <= 180s	% <= 120s	% <= 210s	% <= 150s		% <= 180s	% <= 120s	% <= 210s	% <= 150s
By Media Type										
SATCOM	16,514	97.83%	97.31%	98.55%	98.27%	20,565	97.91%	97.41%	98.71%	98.34%
VHF	15,118	99.33%	99.46%	99.46%	99.64%	27,114	99.44%	99.60%	99.56%	99.71%
HF	62	65.77%	66.38%	73.79%	75.81%	86	78.49%	80.23%	81.88%	85.92%
ALL	31,694	98.47%	98.27%	98.93%	98.88%	47,765	98.74%	98.62%	99.16%	99.09%

Table 1: CPDLC performance by media type

2.3 In 2019, there is no RGS/GES failing the 95% criterion for CPDLC. Table 2 below summarize the aircraft operator/type which failed the 95% criterion for CPDLC.

Period	Jan - Jun 2019					Jul - Dec 2019						
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Msg Counts	95%		99.9%		95%	Msg Counts	95%		99.9%		95%
		ACP	ACTP	ACP	ACTP	PORT		ACP	ACTP	ACP	ACTP	PORT
		% <= 180s	% <= 120s	% <= 210s	% <= 150s	% <= 60s		% <= 180s	% <= 120s	% <= 210s	% <= 150s	% <= 150s
By Aircraft Operator / Type												
FDX/B77L	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	166	94.95%	95.25%	96.99%	96.92%	92.47%
SLK/B738	490	93.19%	93.98%	94.59%	94.55%	91.63%	808	93.66%	92.78%	95.42%	94.06%	95.92%

Table 2: CPDLC performance by aircraft operator/type

2.4 As for the CPDLC differentiated by aircraft operator/type, there are 2 pairs of aircraft operator/type which failed the 95% and 99.9% criteria. Singapore has followed up with the aircraft operators through respective EMAs and filed problems with Boeing CRA.

2.5 As shown in Table 3 below, ADS-C performance by SATCOM was able to meet the 95% criterion but failed marginally for 99.9% criterion. Although the assessment for ADS-C performance by HF was not statistically significant due to the low number of data points, Singapore had notified the operators to use SATCOM and VHF in WSJC FIR.

Period	Jan - Jun 2019			Jul - Dec 2019		
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95%	99.9%	Message Counts	95%	99.9%
		ACP	ACP		ACP	ACP
		% <= 180s	% <= 210s		% <= 180s	% <= 210s
By Media Type						
SATCOM	351,592	96.99%	99.30%	156,270	96.26%	99.11%
VHF	838,279	99.72%	99.92%	425,153	99.54%	99.88%
HF	119	70.59%	83.24%	123	68.70%	85.91%
ALL	1,189,990	98.91%	99.74%	581,546	98.65%	99.67%

Table 3: ADS-C performance by media type

2.6 Table 4 below summarize the RGS/GES and aircraft operator/type which failed the 95% criterion for ADS-C.




Period	Jan - Jun 2019			Jul - Dec 2019		
Colour Key  Meets Criteria  99.0%-99.84%  Under Criteria	Message Counts	95%	99.9%	Message Counts	95%	99.9%
		ACP % <= 180s	ACP % <= 210s		ACP % <= 180s	ACP % <= 210s
By Remote Ground Station (RGS) Ground Earth Station (GES)						
IG1	831	88.45%	98.56%	555	83.42%	97.19%
XXP	21,508	95.56%	99.07%	11,283	94.99%	98.97%
By Aircraft Operator / Type						
ACA/A333	244	98.91%	100%	106	94.37%	100%
ANA/B788	5,553	99.23%	99.60%	171	93.86%	96.75%
AZG/B744	N.A.	N.A.	N.A.	140	86.67%	93.14%
JAL/B772	35,465	98.14%	99.71%	15,404	93.94%	98.33%
N66/GLF4	146	93.41%	94.20%	N.A.	N.A.	N.A.

Table 4: ADS-C by RGS/GES and aircraft operator/type

2.7 For ADS-C differentiated by RGS/GES, 2 stations had failed to meet 95% and 99.9% criteria. Singapore have followed up with the CSP to continue monitoring the performance of these stations and filed problem reports with the CRA.

2.8 As for the ADS-C differentiated by aircraft operator/type, there are 5 pairs of aircraft operator/type which failed the 95% and 99.9% criteria. Singapore have followed up with the aircraft operators and also filed problem reports with the CRA.

2.9 As recommended in FIT-Asia/9, Singapore also conducted monthly data analysis since June 2019. The analysis was done on data from current month and previous two months (rolling three-month data set). Problem reports were reported to CRA and non-compliance cases for aircraft were reported to respective aircraft operators through EMAs. Some of the more significant problems are listed in the table below:

S/N	Problem Description	Analysis / Findings
1	Aircraft from operator X failing RSP180 95% criterion for ADS-C downlink since July 2019.	Notified operator X to look into the low performance with recommended solutions shared during FIT-Asia/9 and filed problem report with CRA. Operator X changed the SDU unit in the aircraft due to initial suspicion on SATCOM system. Relevant logs to CRA were submitted and analyzed. Analysis of logs shown that aircraft has trouble maintaining VHF link and no issue with SATCOM. Wiring checks were done and relevant avionics module were changed on 10 Jun. Singapore to continue monitor its performance with Operator X.
2	Low data link performance of IG1 and IGW1	Submitted problem report to CRA, after CSPs informed Singapore that they will follow up through CRA. CRA updated that the low performance was due to time taken by the avionics to attempt but fail to deliver the messages via VHF when the aircraft was on the edge of VHF coverage, then changed to deliver the messages via SATCOM. CRA also identified the affected areas and aircraft operator/type pairs which were responsible for majority of the failed message exchanges. Suggested solutions were provided, with avionics implementation of Routing Airborne Timer 1 (RAT1) being advised as the most effective to resolve this performance issue.

		Singapore has notified aircraft operators through IATA of CRA recommendations over the identified areas and advised aircraft operators to consider applying the suggested solutions to improve data link performance.
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2.10 While conducting monthly PBCS performance analysis and reporting non-compliance, Singapore encountered the following issues:




S/N	Issues Encountered	For Discussion
1	Aircraft with varying performance across different FIRs	For aircraft with varying performance across different FIRs, how do we assess overall PBCS performance of the aircraft? Who will assess and define the overall PBCS performance of the aircraft?
2	Reinstating PBCS performance	After aircraft operator reported that they have rectified the PBCS performance issue and there is a lack of message exchanges for performance analysis (< 100 messages over 3 months), how do we define that the issue has been rectified?

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.

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FIR		WSJC						
Criteria		RSP180						
Period		January-June 2019			July-December 2019			
Colour Key  Meets Criteria  99.0%-99.84%  Under Criteria	Message Counts	95% % <= 90sec	99.90% % <= 180sec	Message Counts	95% % <= 90sec	99.90% % <= 180sec		
	By Media Type							
	SATCOM	351,592	96.99%	99.30%	156,270	96.26%	99.11%	
	VHF	838,279	99.72%	99.92%	425,153	99.54%	99.88%	
HF	119	70.59%	83.24%	123	68.70%	85.91%		
ALL	1,189,990	98.91%	99.74%	581,546	98.65%	99.67%		
By Remote Ground Station (RGS) Ground Earth Station (GES)								
Designator	Type	(only RGS/GES with message counts >100 recorded)						
APK1	SAT	166,442	97.28%	99.36%	74,708	96.15%	99.10%	
APK2	SAT	95,047	97.25%	99.13%	36,022	97.17%	99.04%	
BDJ1	VHF	136	100.00%	100.00%	394	99.80%	100.00%	
BKI	VHF	66,907	99.80%	99.95%	15,280	99.81%	99.96%	
BKI1	VHF	13,154	99.80%	99.92%	7,651	99.90%	99.93%	
BPN	VHF	243	100.00%	100.00%				
BTH1	VHF	24,665	99.00%	99.57%	7,817	97.94%	99.44%	
BTU	VHF	8,164	99.61%	99.80%	6,395	99.75%	99.88%	
BTU1	VHF	48,326	99.96%	99.98%	19,019	99.85%	99.93%	
BWN	VHF				584	99.89%	100.00%	
BWN1	VHF	17,871	99.92%	99.97%	18,979	99.94%	99.99%	
CGK2	VHF	115	100.00%	100.00%	158	99.46%	99.68%	
CXR	VHF	2,369	99.31%	99.96%	2,016	99.58%	99.93%	
CXRV	VHF				188	99.07%	99.46%	
DLI1	VHF	130	99.55%	100.00%	2,273	99.48%	99.96%	
HDY	VHF	1,148	99.15%	99.92%	401	99.45%	100.00%	
HKT	VHF	142	100.00%	100.00%	103	100.00%	100.00%	
IG1	SAT	831	88.45%	98.56%	555	83.42%	97.19%	
IGW1	SAT	43,892	96.05%	99.48%	18,621	95.62%	99.14%	
JHB	VHF	2,630	99.83%	99.99%	521	99.86%	100.00%	
KBR	VHF	1,424	99.67%	99.89%	509	99.65%	100.00%	
KBR1	VHF	4,423	99.14%	99.78%	5,306	99.56%	99.88%	
KCH	VHF	13,429	98.64%	99.71%	3,931	99.36%	99.76%	
KCH1	VHF	30,493	99.54%	99.84%	12,821	99.29%	99.75%	
KUA	VHF	3,774	99.40%	99.95%	1,434	99.60%	99.81%	
KUA1	VHF	18,460	99.74%	99.95%	11,259	99.20%	99.92%	
KUL	VHF	1,941	99.84%	100.00%	1,075	99.73%	99.85%	
KUL1	VHF	1,239	99.95%	100.00%	906	99.70%	100.00%	
KUL2	VHF	487	100.00%	100.00%	431	99.11%	99.57%	
KULA	VHF	586	99.84%	100.00%	913	99.72%	100.00%	
LBU	VHF	8,851	99.82%	99.94%	3,878	99.93%	99.94%	
MTS1	VHF	1,384	99.18%	99.87%	391	98.99%	99.18%	

MYY	VHF	12,073	99.37%	99.81%	14,918	99.67%	99.91%
MYY1	VHF	8,915	99.93%	100.00%	11,252	99.90%	99.96%
NAW	VHF	2,812	99.25%	99.86%	1,400	99.29%	99.87%
PLM	VHF	203	99.68%	100.00%			
PLM1	VHF	168	99.43%	99.69%	530	96.84%	99.51%
PNH	VHF	106	98.21%	100.00%	103	97.37%	99.14%
PNH1	VHF	313	100.00%	100.00%			
PPS	VHF	2,340	99.41%	99.88%	1,549	99.60%	99.95%
PQC	VHF	1,704	99.71%	99.87%	684	99.69%	100.00%
SBW	VHF	6,171	99.74%	99.92%	2,372	99.76%	99.87%
SBW1	VHF	109	100.00%	100.00%	142	100.00%	100.00%
SDK	VHF	1,577	99.97%	100.00%	1,845	100.00%	100.00%
SDK1	VHF	998	99.40%	99.94%	1,259	99.79%	99.95%
SGN	VHF	2,538	99.85%	99.94%	1,986	99.80%	100.00%
SGN1	VHF	7,648	99.92%	99.97%	2,543	99.71%	99.82%
SGN7	VHF	5,095	99.99%	100.00%	3,395	100.00%	100.00%
SGNV	VHF				225	99.95%	100.00%
SIN	VHF	171,266	99.83%	99.96%	70,665	99.66%	99.93%
SIN1	VHF	8,892	99.28%	99.86%	27,052	98.31%	99.52%
SIN2	VHF	49,413	99.80%	99.93%	9,833	99.26%	99.78%
SIN7	VHF				548	99.59%	99.94%
SIN8	VHF	98,361	99.93%	99.98%	68,350	99.90%	99.97%
SIN9	VHF	62,488	99.93%	99.98%	19,656	99.89%	99.97%
SINA	VHF	5,098	99.85%	99.96%	1,817	99.47%	99.86%
SINV	VHF	9,719	99.96%	99.98%	11,143	99.62%	99.89%
SUB	VHF	249	100.00%	100.00%			
SUB1	VHF				184	100.00%	100.00%
SZB	VHF				337	100.00%	100.00%
SZB1	VHF	124	98.76%	100.00%	670	99.25%	100.00%
TGG	VHF	29,614	99.42%	99.84%	6,622	99.11%	99.69%
TGG1	VHF	999	100.00%	100.00%	491	99.64%	100.00%
TWU	VHF	201	100.00%	100.00%	104	100.00%	100.00%
TWU1	VHF				275	100.00%	100.00%
USM	VHF	6,267	99.38%	99.89%	958	99.52%	100.00%
VCS	VHF	51,678	99.45%	99.91%	22,683	99.30%	99.91%
VCSV	VHF	2,832	99.29%	99.85%	3,109	99.48%	99.90%
XSP	VHF	14,826	99.74%	99.95%	9,011	99.56%	99.87%
XXA	SAT	23,315	96.76%	99.34%	15,232	96.25%	99.41%
XXP	SAT	21,508	95.56%	99.07%	11,283	94.99%	98.97%

FIR	WSJC					
Criteria	RSP180					
Period	January-June 2019			July-December 2019		
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	Message Counts	95% % <= 90sec	99.90% % <= 180sec	Message Counts	95% % <= 90sec	99.90% % <= 180sec
By Aircraft Operator / Type (only message counts >100 recorded)						
9MC/GLEX	159	99.94%	100.00%			
AAR/A333	8,990	99.51%	99.96%	1,321	99.37%	100.00%
AAR/A359	1,401	99.93%	100.00%	4,170	99.50%	99.97%
AAR/B744	3,098	95.97%	99.08%	1,721	96.05%	99.11%
AAR/B772	292	97.88%	99.68%	126	95.01%	98.64%
ABW/B744	183	98.84%	100.00%			
ABW/B748	695	98.29%	99.27%	218	99.90%	100.00%
ACA/A333	244	98.91%	100.00%	106	94.37%	100.00%
ACA/B77L	291	99.40%	99.77%			
ACA/B77W	224	99.34%	99.94%	112	100.00%	100.00%
AFR/B77W	144	99.71%	100.00%			
AIC/A320	114	98.36%	99.66%			
AIC/B788	1,823	99.38%	99.83%	1,243	98.62%	99.47%
AJX/B789	1,481	99.18%	99.49%	5,074	99.06%	99.75%
ANA/B763	6,812	99.56%	99.89%	3,121	99.10%	99.68%
ANA/B772	58	97.88%	99.68%			
ANA/B77W	5,927	98.62%	99.95%	2,129	98.07%	99.77%
ANA/B788	5,553	99.23%	99.60%	171	93.86%	96.75%
ANA/B789	51,270	99.09%	99.65%	15,791	98.89%	99.79%
ANA/B78X	1,535	99.27%	99.93%	2,732	99.34%	100.00%
ASY/C17	219	96.81%	98.35%	174	100.00%	100.00%
AXM/A333	389	98.81%	99.14%			
AZG/B744				140	86.67%	93.14%
B32/GLF6	184	100.00%	100.00%			
B33/GLF6	173	98.73%	100.00%			
B82/FA7X	279	100.00%	100.00%			
B82/GLF4				131	96.95%	99.07%
B82/GLF5				138	99.24%	100.00%
BAW/A388	112	100.00%	100.00%	132	100.00%	100.00%
BAW/B77W	412	99.56%	100.00%	136	98.00%	100.00%
BWJ/GL5T	120	100.00%	100.00%	146	100.00%	100.00%
BWJ/GLEX	157	99.41%	99.66%	112	100.00%	100.00%
CAL/A333	23,001	99.25%	99.58%	10,148	99.23%	99.66%
CAL/A359	150	100.00%	100.00%			
CAL/B744	7,752	98.66%	99.80%	4,693	98.32%	99.85%
CAL/B77W	8,676	98.59%	99.74%	3,519	98.27%	99.85%
CCA/A333	3,037	99.09%	99.92%	2,615	99.20%	99.95%
CCA/A359				2,471	99.38%	100.00%
CCA/B789	11,611	99.17%	99.97%	1,443	99.15%	100.00%




CEB/A333	9,270	99.03%	99.44%	2,542	98.86%	99.66%
CEF/A319	108	99.42%	100.00%			
CES/A332	7,091	99.78%	99.88%	5,303	99.41%	99.71%
CES/A333	4,824	99.82%	100.00%	2,227	99.70%	99.94%
CES/B77W	364	97.57%	99.42%			
CES/B789	2,520	99.45%	99.96%	2,165	99.56%	100.00%
CFX/GL7T	104	99.54%	100.00%			
CKK/B744	242	99.83%	100.00%	794	99.08%	99.51%
CLX/B744	101	100.00%	100.00%	228	98.71%	99.44%
CLX/B748	320	99.00%	99.88%	183	100.00%	100.00%
CNV/B737	264	100.00%	100.00%	400	99.56%	99.74%
CPA/A333	18,574	99.74%	99.95%	8,907	99.67%	99.93%
CPA/A359	7,398	99.83%	100.00%	4,125	99.64%	100.00%
CPA/A35K	3,567	99.87%	100.00%	938	99.49%	100.00%
CPA/B744	1,520	99.43%	99.79%	1,233	99.64%	99.98%
CPA/B772	699	98.47%	99.66%			
CPA/B773	3,160	98.15%	99.59%	1,982	98.59%	99.82%
CPA/B77W	3,782	96.91%	99.23%	5,081	96.71%	99.09%
CSN/A21N	151	100.00%	100.00%	1,313	99.48%	99.85%
CSN/B38M	267	96.95%	99.65%			
DAL/B763	9,510	99.40%	99.85%	1,970	98.58%	99.62%
DAL/B772	499	99.09%	100.00%			
DAL/B77L				121	100.00%	100.00%
DLH/A359				108	100.00%	100.00%
DLH/A388	559	99.96%	100.00%	141	99.68%	100.00%
DKH/B789	532	99.85%	100.00%			
EAU/CL60	271	98.81%	99.48%			
EAU/GL5T				102	100.00%	100.00%
EAU/GLEX	874	98.23%	99.41%	585	98.92%	99.78%
ETD/A332	1,195	100.00%	100.00%			
ETD/A388				155	100.00%	100.00%
ETD/B77W				262	98.56%	99.44%
ETD/B789	439	99.13%	100.00%	528	99.48%	99.60%
ETH/B788	331	100.00%	100.00%	126	99.59%	100.00%
EVA/A332	377	99.61%	99.95%	300	100.00%	100.00%
EVA/A333	4,217	99.57%	99.94%	951	97.90%	99.45%
EVA/B744	1,362	98.16%	99.91%			
EVA/B77L	1,477	99.73%	100.00%	2,088	99.23%	99.96%
EVA/B77W	12,549	99.03%	99.91%	8,413	98.04%	99.86%
FDX/B752	761	99.15%	99.87%	348	96.86%	97.58%
FDX/B763	1,873	97.38%	98.94%	2,434	97.45%	99.13%
FDX/B77L	6,046	97.65%	99.31%	3,048	96.68%	99.09%
FDX/MD11	3,316	98.31%	99.30%	1,156	97.28%	98.68%
FIN/A359	295	100.00%	100.00%			
FJI/A332	253	99.88%	100.00%			
GIA/A332	2,072	99.01%	99.89%	996	98.95%	100.00%
GIA/A333	2,739	99.11%	99.98%	181	99.15%	100.00%

GIA/B744				1,967	99.10%	99.91%
GTI/B744				212	98.27%	100.00%
HDA/A333	3,672	99.73%	99.96%	3,159	99.63%	99.93%
HKC/A332	5,647	99.44%	99.99%	3,196	99.17%	99.81%
HVN/A359	6,947	99.64%	100.00%	4,361	99.78%	100.00%
HVN/B789	11,117	98.86%	99.71%	8,767	98.63%	99.71%
HVN/GLF4	121	99.07%	100.00%			
JAI/A333	188	99.88%	100.00%			
JAL/B763	223	100.00%	100.00%			
JAL/B772	35,465	98.14%	99.71%	15,404	93.94%	98.33%
JAL/B77W	577	96.01%	99.91%			
JAL/B789	5,951	99.78%	99.93%	2,091	99.86%	100.00%
JST/B788	10,083	99.25%	99.79%	5,952	98.87%	99.66%
KAL/A333	6,713	98.63%	99.82%	2,738	98.39%	99.47%
KAL/B744	1,945	99.22%	99.72%	1,551	98.20%	99.61%
KAL/B748	4,377	98.45%	99.32%	2,018	98.18%	99.17%
KAL/B773	8,606	98.75%	99.74%	3,841	98.44%	99.77%
KAL/B77L	1,638	99.27%	100.00%	936	99.56%	100.00%
KAL/B77W	9,978	97.28%	99.37%	5,610	97.17%	99.61%
KAL/GLEX	189	100.00%	100.00%			
KIW/B752				105	97.80%	100.00%
KLM/B772	645	99.43%	100.00%	322	95.50%	98.62%
KLM/B77W	2,850	99.66%	99.96%	1,970	98.00%	99.83%
LKE/A320	908	98.93%	99.48%	102	99.60%	100.00%
LNI/A333	1,161	100.00%	100.00%	232	100.00%	100.00%
LNI/A339				499	99.86%	100.00%
LOT/B788	157	100.00%	100.00%			
MAS/A332	11,550	99.21%	99.54%	5,027	99.57%	99.70%
MAS/A333	12,468	99.39%	99.74%	7,063	99.77%	99.93%
MAS/A359	6,846	99.36%	99.78%	4,236	99.78%	99.92%
MAS/A388	9,405	99.68%	99.85%	357	99.29%	99.80%
MAS/B738	134,739	98.78%	99.78%	59,369	98.96%	99.71%
MAU/A332	255	100.00%	100.00%			
MLM/A318	270	99.65%	99.74%			
MPT/FA8X	417	99.93%	100.00%	127	100.00%	100.00%
MYS/GL5T	177	100.00%	100.00%			
N14/GLEX	174	100.00%	100.00%			
N18/GLF6	252	98.21%	99.94%	111	96.12%	100.00%
N28/GL5T	106	98.44%	98.93%			
N35/GLF5	105	99.76%	100.00%			
N55/GLF5	233	99.77%	100.00%	116	98.44%	99.61%
N55/GLF6	107	98.92%	99.94%			
N60/GLEX	126	98.72%	100.00%			
N65/GLF6	153	100.00%	100.00%			
N66/GLF4	146	93.41%	94.20%			
N75/GLF5	115	99.60%	100.00%			
N86/GLF4	409	99.95%	100.00%	242	98.97%	100.00%

N88/B737				109	97.58%	99.11%
N88/GL5T				124	99.20%	99.64%
N88/GLF5	481	98.96%	99.92%	201	99.41%	100.00%
N89/GLEX				275	99.67%	100.00%
N90/GLF5	111	99.10%	100.00%			
N93/GLF5	107	98.06%	100.00%			
N95/GLF6	127	99.82%	100.00%			
N97/GLF5	342	97.87%	99.41%	108	98.75%	100.00%
NCA/B744	112	99.35%	100.00%			
NCA/B748	2,406	99.84%	99.91%	1,125	99.13%	99.38%
NRS/B789	131	100.00%	100.00%			
PAC/B744	1,260	99.08%	99.72%	217	100.00%	100.00%
PAC/B748				326	99.90%	100.00%
PAL/A21N	3,089	98.67%	99.80%	2,129	97.28%	99.24%
PAL/A321	2,416	96.94%	98.04%	3,326	97.47%	98.78%
PAL/A333	12,741	99.41%	99.91%	2,908	99.33%	99.95%
PAL/A359	1,046	99.90%	100.00%	728	99.94%	100.00%
PAL/B77W	1,064	99.59%	100.00%	1,520	98.77%	100.00%
PRV/GLF4	102	99.29%	100.00%			
PUT/GLEX	107	98.72%	100.00%			
QFA/A332	2,627	98.93%	99.53%	527	99.69%	99.99%
QFA/A333	5,242	99.60%	99.80%	3,985	99.41%	99.87%
QFA/A388	705	100.00%	100.00%	276	100.00%	100.00%
QFA/B744	263	96.85%	98.86%			
QFA/B748				105	98.62%	100.00%
QQE/GLF6	165	98.32%	99.29%			
QTR/A359	694	100.00%	100.00%	436	100.00%	100.00%
QTR/A35K	1,116	99.93%	100.00%	907	100.00%	100.00%
QTR/A388	179	100.00%	100.00%	153	100.00%	100.00%
QTR/B77L	454	96.48%	99.68%	1,133	97.76%	99.62%
QTR/B77W	2,039	98.48%	99.69%	2,000	96.65%	99.28%
QTR/B788	1,741	99.74%	100.00%	513	99.34%	99.86%
RBA/A20N	3,556	98.71%	99.53%	19,194	98.93%	99.83%
RBA/A320	41,417	98.69%	99.79%	5,887	98.45%	99.77%
RBA/A332				1,009	99.71%	99.98%
RBA/A339				1,881	99.66%	99.93%
RBA/B788	14,266	99.27%	99.63%	7,063	98.68%	99.45%
RCH/C17	1,059	98.94%	99.61%	514	98.61%	99.94%
RKS/GLF6	126	95.91%	96.50%			
RMF/GLEX	105	100.00%	100.00%			
ROJ/B737	186	99.74%	100.00%			
SDM/B77W	466	98.32%	99.54%	491	97.90%	99.88%
SHE/FA7X	209	97.54%	99.30%			
SIA/A320	1,987	99.86%	100.00%	1,301	99.93%	99.99%
SIA/A333	46,299	99.38%	99.65%	13,917	99.40%	99.71%
SIA/A359	54,620	99.60%	99.88%	32,332	99.53%	99.88%
SIA/A388	23,206	99.86%	99.99%	10,217	99.68%	99.99%

SIA/B744	7,599	99.25%	99.72%	4,339	99.21%	99.81%
SIA/B772	24,004	99.00%	99.80%	5,796	99.03%	99.77%
SIA/B773	33,153	98.44%	99.85%	10,318	98.81%	99.86%
SIA/B77W	69,820	97.19%	99.41%	35,292	97.20%	99.35%
SIA/B78X	61,857	98.80%	99.94%	33,213	98.34%	99.89%
SLK/A319	1,166	99.52%	99.64%	175	100.00%	100.00%
SLK/A320	12,684	99.63%	99.93%	9,363	99.65%	99.81%
SLK/B38M	3,578	98.85%	99.39%			
SLK/B738	27,666	99.22%	99.64%	15,191	98.63%	99.37%
SPA/B737	175	99.53%	100.00%			
SVA/B77W	117	100.00%	100.00%			
SVA/B789	105	100.00%	100.00%			
SVW/GL5T	250	98.30%	99.52%	154	99.52%	100.00%
T7A/GLF5	104	100.00%	100.00%			
T7A/GLF6				161	99.88%	100.00%
T7C/GLEX	238	100.00%	100.00%	187	99.86%	100.00%
T7G/B738				131	100.00%	100.00%
T7L/GLF6	204	99.08%	99.45%			
T7R/GL5T	253	99.49%	100.00%			
T7T/GL5T	166	100.00%	100.00%			
TAX/A333				1,307	99.07%	99.81%
TAX/A339				597	97.35%	99.91%
TBJ/GL5T	283	99.91%	100.00%			
TBJ/GLEX	173	97.47%	99.11%	170	100.00%	100.00%
TBJ/GLF4	552	99.64%	99.90%	310	98.79%	99.49%
TBJ/GLF6	265	98.92%	100.00%			
TGW/B788	25,420	99.31%	99.68%	11,529	99.00%	99.71%
TGW/B789	30,597	99.58%	99.86%	14,727	99.36%	99.82%
THA/A333	162	100.00%	100.00%			
THA/A359	8,126	99.20%	100.00%	3,366	99.06%	100.00%
THA/B744	13,382	97.58%	99.14%	5,357	96.98%	98.84%
THA/B772	3,406	98.27%	99.65%	3,387	98.35%	99.71%
THA/B773	367	99.68%	100.00%			
THA/B77W	315	100.00%	100.00%	440	99.70%	100.00%
THA/B789	6,047	99.33%	99.97%	3,741	98.50%	99.96%
THY/B77W	983	99.88%	100.00%	533	99.54%	99.81%
THY/B789				838	99.92%	100.00%
TRE/C17	132	100.00%	100.00%	115	98.73%	100.00%
UAE/A388	2,968	99.63%	100.00%	1,673	99.79%	100.00%
UAE/B77L	201	98.38%	100.00%	171	100.00%	100.00%
UAE/B77W	9,962	98.03%	99.39%	3,127	99.14%	99.86%
UAL/B789	22,348	98.92%	99.86%	8,973	98.98%	99.89%
UPS/B744	973	97.07%	98.89%	342	96.09%	99.30%
UPS/B752	472	96.76%	99.47%	259	98.07%	99.41%
UPS/B763	8,367	98.81%	99.70%	4,147	98.55%	99.41%
V8B/B748	141	97.21%	97.71%			
V8M/B762	627	99.81%	100.00%	230	99.61%	100.00%




V8O/B788				459	97.57%	99.29%
VHP/GLF5	213	98.89%	100.00%			
VJT/CL35	334	99.28%	99.96%			
VJT/GLEX	1,603	99.01%	99.60%	859	98.06%	99.03%
VPB/GLF6	132	100.00%	100.00%			
VPC/FA8X				166	100.00%	100.00%
VPC/GLEX				159	98.15%	99.10%
VPC/GLF5	294	99.09%	100.00%	161	98.43%	99.24%
VPC/GLF6	279	99.89%	100.00%	296	99.39%	99.96%
VQB/GL5T	197	100.00%	100.00%	294	99.02%	99.29%
VQB/GLEX	112	95.09%	97.49%	125	97.88%	99.47%
XAX/A333	11,048	99.04%	99.78%	6,019	99.39%	99.91%

FIR		WSJC									
Criteria		RCP240									
Period		Jan - Jun 2019					Jul - Dec 2019				
Colour Key  Meets Criteria  99.0%-99.84%  Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark		
		ACP	ACTP	ACP	ACTP		ACP	ACTP	ACP	ACTP	
		% <= 180sec	% <= 120sec	% <= 210sec	% <= 150sec		% <=180sec	% <= 120sec	% <= 210sec	% <= 150sec	
By Media Type											
SATCOM	16,514	97.83%	97.31%	98.55%	98.27%	20,565	97.91%	97.41%	98.71%	98.34%	
VHF	15,118	99.33%	99.46%	99.46%	99.64%	27,114	99.44%	99.60%	99.56%	99.71%	
HF	62	65.77%	66.38%	73.79%	75.81%	86	78.49%	80.23%	81.88%	85.92%	
ALL	31,694	98.47%	98.27%	98.93%	98.88%	47,765	98.74%	98.62%	99.16%	99.09%	
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES with message counts >100)									
APK1	SAT	7,825	97.63%	97.18%	98.25%	97.99%	10,351	97.92%	97.42%	98.60%	98.20%
APK2	SAT	3,352	97.58%	97.08%	98.75%	97.84%	3,898	97.63%	96.77%	98.87%	97.95%
BKI	VHF	1,858	99.57%	99.74%	99.63%	99.79%	2,567	99.50%	99.71%	99.65%	99.75%
BKI1	VHF	310	98.67%	99.90%	99.26%	100.00%	960	99.71%	100.00%	99.80%	100.00%
BTH1	VHF	398	100.00%	99.76%	100.00%	99.86%	1,224	99.35%	98.92%	99.57%	99.48%
BTU	VHF	303	98.51%	98.66%	98.74%	99.38%	705	99.57%	99.86%	99.60%	99.86%
BTU1	VHF	2,381	99.76%	99.94%	99.78%	100.00%	4,822	99.57%	99.89%	99.66%	99.90%
BWN1	VHF	737	99.73%	99.76%	99.76%	99.87%	1,724	99.58%	99.84%	99.77%	99.85%
IGW1	SAT	3,185	98.65%	97.88%	99.18%	99.37%	2,992	97.59%	97.39%	98.43%	98.60%
KCH	VHF	805	99.99%	99.66%	100.00%	100.00%	959	99.71%	99.70%	99.80%	99.77%
KCH1	VHF	2,116	99.27%	99.69%	99.37%	99.77%	4,362	99.52%	99.70%	99.58%	99.78%
KUA1	VHF						209	97.97%	100.00%	98.22%	100.00%
LBU	VHF	632	99.83%	99.85%	99.86%	99.89%	614	100.00%	100.00%	100.00%	100.00%
MYY	VHF	797	98.95%	99.14%	99.20%	99.40%	1,763	99.59%	99.67%	99.64%	99.73%
MYY1	VHF	139	100.00%	100.00%	100.00%	100.00%	535	99.13%	99.65%	99.17%	99.69%
PPS	VHF	260	98.85%	98.63%	98.93%	98.79%	250	100.00%	99.97%	100.00%	100.00%
SBW	VHF	279	98.92%	98.71%	98.99%	98.85%	366	99.41%	99.35%	99.46%	99.46%
SDK	VHF						219	99.55%	99.78%	99.57%	99.95%

SIN	VHF	1,573	99.12%	98.54%	99.21%	99.05%	1,639	99.06%	98.98%	99.24%	99.17%
SIN2	VHF	189	98.57%	99.55%	98.65%	99.63%	444	100.00%	99.87%	100.00%	100.00%
SIN8	VHF	313	98.68%	99.00%	99.14%	99.39%	546	98.89%	98.63%	99.31%	99.31%
TGG	VHF						128	97.50%	96.76%	98.08%	97.95%
VCS	VHF	1,222	99.58%	99.63%	99.70%	99.78%	1,946	99.36%	99.45%	99.40%	99.59%
VCSV	VHF	142	99.20%	99.31%	99.30%	99.32%	300	99.97%	99.88%	100.00%	99.97%
XSP	VHF	188	99.39%	99.47%	99.47%	99.48%	218	100.00%	99.77%	100.00%	100.00%
XXA	SAT	1,226	97.93%	97.64%	98.45%	98.59%	1,957	99.29%	98.57%	99.57%	99.40%
XXP	SAT	868	97.70%	96.77%	98.32%	98.05%	1,286	97.38%	97.36%	98.41%	98.29%

FIR	WSJC											
Criteria	RCP240											
Period	Jan - Jun 2019					Jul - Dec 2019						
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	PORT %<60secs		ACP % <=180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	PORT %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)												
AAR/A333	143	95.45%	96.81%	95.59%	97.55%	93.18%	106	98.76%	99.50%	100.00%	100.00%	96.57%
AAR/A359	112	100.00%	100.00%	100.00%	100.00%	100.00%	304	99.57%	99.37%	99.68%	99.47%	98.85%
AAR/B744	110	96.92%	99.55%	97.59%	100.00%	96.10%	138	98.11%	98.71%	98.52%	99.10%	94.69%
AIC/B788							120	97.73%	96.49%	98.36%	97.59%	99.40%
AJX/B789	158	98.84%	98.90%	98.88%	99.00%	98.67%	480	97.23%	97.17%	97.31%	97.24%	97.17%
ANA/B763	107	100.00%	100.00%	100.00%	100.00%	97.01%	131	99.30%	100.00%	99.33%	100.00%	96.18%
ANA/B77W							192	98.74%	98.08%	98.92%	98.96%	98.30%
ANA/B788	138	99.43%	98.55%	99.63%	99.21%	100.00%						
ANA/B789	1,454	98.78%	98.13%	99.20%	98.69%	99.14%	1,651	98.99%	98.85%	99.07%	98.97%	98.71%
ANA/B78X	171	99.62%	99.43%	99.73%	99.53%	99.84%	263	98.50%	98.52%	98.53%	98.59%	97.89%
CAL/A333	382	97.64%	97.43%	98.80%	98.02%	96.16%	550	97.62%	97.23%	98.86%	98.19%	96.91%
CAL/B744	188	99.84%	99.60%	100.00%	100.00%	94.15%	326	99.09%	99.05%	99.31%	99.19%	97.55%
CAL/B77W	205	100.00%	100.00%	100.00%	100.00%	100.00%	291	100.00%	99.88%	100.00%	100.00%	99.17%
CEB/A333	347	99.22%	98.76%	99.35%	99.34%	99.06%	283	100.00%	100.00%	100.00%	100.00%	99.08%
CES/A332							136	99.04%	99.54%	99.36%	99.73%	98.79%
CPA/A333	305	99.65%	99.76%	99.69%	100.00%	93.55%	432	99.32%	99.46%	99.87%	99.59%	96.41%
CPA/A359							105	100.00%	100.00%	100.00%	100.00%	97.76%
DAL/B763	288	98.55%	98.15%	98.85%	99.36%	95.83%	175	99.72%	100.00%	99.91%	100.00%	98.98%
EVA/B77W	151	99.45%	99.42%	99.49%	99.46%	99.56%	252	100.00%	99.09%	100.00%	100.00%	99.14%
FDX/B77L							166	94.95%	95.25%	96.99%	96.92%	92.47%
HVN/A359	331	99.24%	99.83%	99.46%	100.00%	98.06%	361	99.88%	100.00%	99.97%	100.00%	99.17%
HVN/B789	449	98.40%	98.01%	99.13%	98.82%	98.83%	980	98.65%	98.27%	99.32%	99.10%	98.16%
JAL/B772	1,052	99.75%	99.22%	99.85%	99.56%	98.86%	1,555	99.45%	98.59%	99.76%	99.41%	98.86%
JAL/B789	205	100.00%	100.00%	100.00%	100.00%	100.00%	302	100.00%	100.00%	100.00%	100.00%	99.50%
JST/B788	370	99.45%	99.13%	99.79%	99.53%	99.15%	555	98.26%	97.61%	99.28%	98.38%	98.74%
KAL/A333	124	97.33%	97.58%	98.45%	98.22%	95.51%	204	97.90%	96.96%	98.72%	99.30%	93.63%
KAL/B748							132	99.62%	99.31%	99.91%	99.55%	98.49%
KAL/B773	162	97.00%	97.02%	97.50%	97.33%	99.45%	245	100.00%	99.62%	100.00%	99.94%	98.90%

KAL/B77W	206	98.57%	97.30%	98.92%	98.38%	98.93%	389	98.55%	97.62%	99.01%	98.18%	98.59%
MAS/A332	221	98.50%	98.32%	98.65%	98.46%	97.84%	315	97.67%	98.21%	98.10%	98.30%	95.56%
MAS/A333							186	99.89%	100.00%	100.00%	100.00%	97.85%
MAS/A359							289	98.44%	98.34%	99.27%	98.79%	98.12%
MAS/B738	6,371	98.82%	98.53%	99.28%	99.44%	98.05%	9,887	98.98%	98.96%	99.33%	99.46%	98.08%
PAL/A21N	208	99.52%	99.20%	99.56%	99.59%	97.69%	305	99.09%	99.67%	99.34%	99.73%	96.59%
PAL/A321	135	99.01%	98.52%	99.39%	99.05%	95.56%	537	99.16%	99.01%	99.69%	99.54%	97.25%
PAL/A333	382	96.64%	96.57%	96.70%	96.84%	94.59%	315	99.06%	99.09%	99.10%	99.17%	96.03%
PAL/B77W							187	99.72%	99.49%	100.00%	99.69%	98.13%
QFA/A333	188	97.78%	98.92%	98.55%	99.57%	90.69%	353	97.01%	97.99%	97.57%	99.31%	91.22%
RBA/A20N	372	99.01%	99.51%	99.19%	99.72%	95.43%	2,064	98.86%	98.89%	99.27%	99.35%	96.61%
RBA/A320	1,440	99.27%	99.53%	99.62%	99.87%	96.88%	612	99.02%	99.35%	99.17%	99.71%	96.73%
RBA/A339							179	100.00%	100.00%	100.00%	100.00%	100.00%
RBA/B788	664	99.00%	98.73%	99.38%	98.99%	98.95%	709	98.55%	97.88%	99.65%	98.60%	99.55%
SIA/A320							117	100.00%	100.00%	100.00%	100.00%	100.00%
SIA/A333	941	98.33%	98.19%	99.42%	98.54%	98.09%	1,146	99.01%	99.08%	99.55%	99.28%	97.56%
SIA/A359	1,899	96.38%	96.65%	97.17%	97.42%	95.79%	3,562	98.27%	98.29%	98.90%	98.55%	98.09%
SIA/A388	329	97.02%	97.07%	97.27%	97.58%	95.99%	499	99.63%	100.00%	99.68%	100.00%	98.80%
SIA/B772	574	99.74%	99.78%	100.00%	99.89%	99.27%	312	100.00%	100.00%	100.00%	100.00%	98.58%
SIA/B773	891	99.42%	99.10%	99.79%	99.58%	98.69%	1,105	99.25%	98.79%	99.69%	99.53%	98.28%
SIA/B77W	1,676	98.12%	96.18%	98.87%	97.66%	98.81%	2,159	99.07%	97.81%	99.65%	98.85%	98.43%
SIA/B78X	2,102	99.50%	99.11%	99.65%	99.43%	98.93%	4,081	99.22%	99.11%	99.34%	99.30%	99.04%
SLK/A320	303	99.82%	99.77%	99.98%	100.00%	98.28%	601	99.67%	99.50%	99.67%	99.67%	97.75%
SLK/B738	490	93.19%	93.98%	94.59%	94.55%	91.63%	808	93.66%	92.78%	95.42%	94.06%	95.92%
TAX/A333							152	98.09%	98.71%	99.37%	99.47%	93.71%
TGW/B788	267	99.13%	98.82%	99.79%	99.02%	100.00%	369	98.53%	98.16%	99.73%	98.50%	99.13%
TGW/B789	344	99.07%	98.79%	99.89%	98.95%	99.90%	396	99.30%	98.32%	100.00%	99.07%	99.39%
THA/A359	336	99.52%	98.98%	99.71%	100.00%	98.61%	465	99.64%	99.43%	99.74%	99.82%	99.19%
THA/B744	610	96.87%	97.39%	97.71%	98.18%	97.25%	737	97.05%	96.68%	97.69%	97.85%	98.03%
THA/B772	184	99.23%	99.47%	99.57%	99.60%	94.84%	346	99.73%	98.24%	99.76%	99.43%	97.98%
THA/B789	325	98.28%	96.00%	98.74%	98.05%	98.92%	443	99.83%	98.96%	99.98%	99.64%	99.10%
UAE/B77W	227	97.28%	96.09%	97.93%	97.83%	97.94%						
UAL/B789	749	99.60%	99.80%	99.64%	100.00%	98.40%	1,109	99.45%	99.76%	99.71%	99.81%	99.01%
XAX/A333							235	99.47%	99.44%	99.64%	99.60%	97.87%

REQUIRED SURVEILLANCE PERFORMANCE						
Region	FIT-Asia					
Performance Criteria	RSP180					
Time Period	2019 January-June			2019 July-December		
Colour Key  Meets Criteria  99.0%-99.84%  Under Criteria	No. Messages	Criteria		No. Messages	Criteria	
		95%	99.90%		95%	99.90%
Aggregate		% <= 90sec	% <= 180sec		% <= 90sec	% <= 180sec
WSJC	1,189,990	98.91%	99.74%	581,546	98.65%	99.67%

Criteria		RSP180						
Period		Jan-June 2019			July-December 2019			
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	Message Counts	95%	99.90%	Message Counts	95%	99.90%		
		% <= 90sec	% <= 180sec		% <= 90sec	% <= 180sec		
FIR	By Media Type							
WSJC	HF	119	70.59%	83.24%	123	68.70%	85.91%	
By Remote Ground Station (RGS) Ground Earth Station (GES)								
FIR	Designator	Type	(only RGS/GES with message counts >100 recorded)					
WSJC	IG1	SAT	831	88.45%	98.56%	555	83.42%	97.19%
WSJC	XXP	SAT	21,508	95.56%	99.07%	11,283	94.99%	98.97%

Criteria		RSP180					
Period		Jan-June 2019			July-December 2019		
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	Message Counts	95%	99.90%	Message Counts	95%	99.90%	
		% <= 90sec	% <= 180sec		% <= 90sec	% <= 180sec	
FIR	By Aircraft Operator / Type (only message counts >100 recorded)						
WSJC	AAR/B772	292	97.88%	99.68%	126	95.01%	98.64%
WSJC	ACA/A333	244	98.91%	100.00%	106	94.37%	100.00%
WSJC	ANA/B788	5,553	99.23%	99.60%	171	93.86%	96.75%
WSJC	ASY/C17	219	96.81%	98.35%	174	100.00%	100.00%
WSJC	AZG/B744				140	86.67%	93.14%
WSJC	FDX/B752	761	99.15%	99.87%	348	96.86%	97.58%

WSJC	FDX/B763	1,873	97.38%	98.94%	2,434	97.45%	99.13%
WSJC	FDX/MD11	3,316	98.31%	99.30%	1,156	97.28%	98.68%
WSJC	JAL/B772	35,465	98.14%	99.71%	15,404	93.94%	98.33%
WSJC	KLM/B772	645	99.43%	100.00%	322	95.50%	98.62%
WSJC	N28/GL5T	106	98.44%	98.93%			
WSJC	N66/GLF4	146	93.41%	94.20%			
WSJC	PAL/A321	2,416	96.94%	98.04%	3,326	97.47%	98.78%
WSJC	QFA/B744	263	96.85%	98.86%			
WSJC	RKS/GLF6	126	95.91%	96.50%			
WSJC	THA/B744	13,382	97.58%	99.14%	5,357	96.98%	98.84%
WSJC	UPS/B744	973	97.07%	98.89%	342	96.09%	99.30%
WSJC	V8B/B748	141	97.21%	97.71%			
WSJC	VQB/GLEX	112	95.09%	97.49%	125	97.88%	99.47%

Criteria		RCP240										
Period		Jan - Jun 2019					Jul - Dec 2019					
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark			
		ACP	ACTP	ACP	ACTP		ACP	ACTP	ACP	ACTP		
		% < = 180sec	% < = 120sec	% < = 210sec	% < = 150sec		% < = 180sec	% < = 120sec	% < = 210sec	% < = 150sec		
FIR	By Media Type											
WSJC	SATCOM	16,514	97.83%	97.31%	98.55%	98.27%	20,565	97.91%	97.41%	98.71%	98.34%	
WSJC	HF	62	65.77%	66.38%	73.79%	75.81%	86	78.49%	80.23%	81.88%	85.92%	
	By Remote Ground Station (RGS) Ground Earth Station (GES)											
FIR	Designator	Type	(RGS/GES with message counts >100)									
WSJC	APK1	SAT	7,825	97.63%	97.18%	98.25%	97.99%	10,351	97.92%	97.42%	98.60%	98.20%
WSJC	APK2	SAT	3,352	97.58%	97.08%	98.75%	97.84%	3,898	97.63%	96.77%	98.87%	97.95%
WSJC	BTU	VHF	303	98.51%	98.66%	98.74%	99.38%	705	99.57%	99.86%	99.60%	99.86%
WSJC	IGW1	SAT	3,185	98.65%	97.88%	99.18%	99.37%	2,992	97.59%	97.39%	98.43%	98.60%
WSJC	KUA1	VHF						209	97.97%	100.00%	98.22%	100.00%
WSJC	PPS	VHF	260	98.85%	98.63%	98.93%	98.79%	250	100.00%	99.97%	100.00%	100.00%
WSJC	SBW	VHF	279	98.92%	98.71%	98.99%	98.85%	366	99.41%	99.35%	99.46%	99.46%
WSJC	SIN2	VHF	189	98.57%	99.55%	98.65%	99.63%	444	100.00%	99.87%	100.00%	100.00%
WSJC	TGG	VHF						128	97.50%	96.76%	98.08%	97.95%
WSJC	XXA	SAT	1,226	97.93%	97.64%	98.45%	98.59%	1,957	99.29%	98.57%	99.57%	99.40%
WSJC	XXP	SAT	868	97.70%	96.77%	98.32%	98.05%	1,286	97.38%	97.36%	98.41%	98.29%
WSJC												
WSJC												
WSJC												

Criteria		RCP240											
Period		Jan - Jun 2019					Jul - Dec 2019						
Colour Key ■ Meets Criteria ■ 99.0%-99.84% ■ Under Criteria	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	% < 60secs		% < = 180sec	% < = 120sec	% < = 210sec	% < = 150sec	% < 60secs	
FIR	By Aircraft Operator / Type (only message counts >100 recorded)												
WSJC	AAR/A333	143	95.45%	96.81%	95.59%	97.55%	93.18%	106	98.76%	99.50%	100.00%	100.00%	96.57%
WSJC	AAR/B744	110	96.92%	99.55%	97.59%	100.00%	96.10%	138	98.11%	98.71%	98.52%	99.10%	94.69%
WSJC	AIC/B788							120	97.73%	96.49%	98.36%	97.59%	99.40%
WSJC	AJX/B789	158	98.84%	98.90%	98.88%	99.00%	98.67%	480	97.23%	97.17%	97.31%	97.24%	97.17%
WSJC	ANA/B77W							192	98.74%	98.08%	98.92%	98.96%	98.30%

WSJC	ANA/B789	1,454	98.78%	98.13%	99.20%	98.69%	99.14%	1,651	98.99%	98.85%	99.07%	98.97%	98.71%
WSJC	ANA/B78X	171	99.62%	99.43%	99.73%	99.53%	99.84%	263	98.50%	98.52%	98.53%	98.59%	97.89%
WSJC	CAL/A333	382	97.64%	97.43%	98.80%	98.02%	96.16%	550	97.62%	97.23%	98.86%	98.19%	96.91%
WSJC	CAL/B744	188	99.84%	99.60%	100.00%	100.00%	94.15%	326	99.09%	99.05%	99.31%	99.19%	97.55%
WSJC	CPA/A333	305	99.65%	99.76%	99.69%	100.00%	93.55%	432	99.32%	99.46%	99.87%	99.59%	96.41%
WSJC	DAL/B763	288	98.55%	98.15%	98.85%	99.36%	95.83%	175	99.72%	100.00%	99.91%	100.00%	98.98%
WSJC	FDX/B77L							166	94.95%	95.25%	96.99%	96.92%	92.47%
WSJC	HVN/B789	449	98.40%	98.01%	99.13%	98.82%	98.83%	980	98.65%	98.27%	99.32%	99.10%	98.16%
WSJC	JST/B788	370	99.45%	99.13%	99.79%	99.53%	99.15%	555	98.26%	97.61%	99.28%	98.38%	98.74%
WSJC	KAL/A333	124	97.33%	97.58%	98.45%	98.22%	95.51%	204	97.90%	96.96%	98.72%	99.30%	93.63%
WSJC	KAL/B773	162	97.00%	97.02%	97.50%	97.33%	99.45%	245	100.00%	99.62%	100.00%	99.94%	98.90%
WSJC	KAL/B77W	206	98.57%	97.30%	98.92%	98.38%	98.93%	389	98.55%	97.62%	99.01%	98.18%	98.59%
WSJC	MAS/A332	221	98.50%	98.32%	98.65%	98.46%	97.84%	315	97.67%	98.21%	98.10%	98.30%	95.56%
WSJC	MAS/A359							289	98.44%	98.34%	99.27%	98.79%	98.12%
WSJC	PAL/A333	382	96.64%	96.57%	96.70%	96.84%	94.59%	315	99.06%	99.09%	99.10%	99.17%	96.03%
WSJC	QFA/A333	188	97.78%	98.92%	98.55%	99.57%	90.69%	353	97.01%	97.99%	97.57%	99.31%	91.22%
WSJC	RBA/B788	664	99.00%	98.73%	99.38%	98.99%	98.95%	709	98.55%	97.88%	99.65%	98.60%	99.55%
WSJC	SIA/A333	941	98.33%	98.19%	99.42%	98.54%	98.09%	1,146	99.01%	99.08%	99.55%	99.28%	97.56%
WSJC	SIA/A359	1,899	96.38%	96.65%	97.17%	97.42%	95.79%	3,562	98.27%	98.29%	98.90%	98.55%	98.09%
WSJC	SIA/A388	329	97.02%	97.07%	97.27%	97.58%	95.99%	499	99.63%	100.00%	99.68%	100.00%	98.80%
WSJC	SIA/B77W	1,676	98.12%	96.18%	98.87%	97.66%	98.81%	2,159	99.07%	97.81%	99.65%	98.85%	98.43%
WSJC	SLK/B738	490	93.19%	93.98%	94.59%	94.55%	91.63%	808	93.66%	92.78%	95.42%	94.06%	95.92%
WSJC	TAX/A333							152	98.09%	98.71%	99.37%	99.47%	93.71%
WSJC	TGW/B788	267	99.13%	98.82%	99.79%	99.02%	100.00%	369	98.53%	98.16%	99.73%	98.50%	99.13%
WSJC	TGW/B789	344	99.07%	98.79%	99.89%	98.95%	99.90%	396	99.30%	98.32%	100.00%	99.07%	99.39%
WSJC	THA/B744	610	96.87%	97.39%	97.71%	98.18%	97.25%	737	97.05%	96.68%	97.69%	97.85%	98.03%
WSJC	THA/B772	184	99.23%	99.47%	99.57%	99.60%	94.84%	346	99.73%	98.24%	99.76%	99.43%	97.98%
WSJC	THA/B789	325	98.28%	96.00%	98.74%	98.05%	98.92%	443	99.83%	98.96%	99.98%	99.64%	99.10%
WSJC	UAE/B77W	227	97.28%	96.09%	97.93%	97.83%	97.94%						

FIT-Asia/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

Report date	18 June 2020
Period of observed non-compliance	January – June 2019
Reporting air navigation service provider (ANSP)	CAAS
Reporting to regional monitoring agency (RMA)	
Non-compliance type (fleet or individual airframe)	Fleet
ANSP notes	

ANSP Monitoring Results:

PBCS Monitoring Report								
Period: January to June 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
Fleet Performance								
	WSJC	AAR/A333	8,990	99.51%	99.96%	143	95.45%	95.59%
	WSJC	AAR/B744	3,098	95.97%	99.08%	110	96.92%	97.59%
	WSJC	AJX/B789	1,481	99.18%	99.49%	158	98.84%	98.88%
	WSJC	ASY/C17	219	96.81%	98.35%	-		
	WSJC	CAL/A333	23,001	99.25%	99.58%	382	97.64%	98.80%
	WSJC	DAL/B763	9,510	99.40%	99.85%	288	98.55%	98.85%

FIT-ASIA/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

PBCS Monitoring Report								
Period: January to June 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
	WSJC	FDX/B763	1,873	97.38%	98.94%	-		
	WSJC	KAL/A333	6,713	98.63%	99.82%	124	97.33%	98.45%
	WSJC	KAL/B773	8,606	98.75%	99.74%	162	97.00%	97.50%
	WSJC	KAL/B77W	9,978	97.28%	99.37%	206	98.57%	98.92%
	WSJC	MAS/A332	11,550	99.21%	99.54%	221	98.50%	98.65%
	WSJC	N28/GL5T	106	98.44%	98.93%	-		
	WSJC	N66/GLF4	146	93.41 %	94.20%	-		
	WSJC	PAL/A321	2,416	96.94%	98.04%	135	99.01%	99.39%
	WSJC	PAL/A333	12,741	99.41%	99.91%	382	96.64%	96.70%
	WSJC	QFA/A333	5,242	99.60%	99.80%	188	97.78%	98.55%
	WSJC	QFA/B744	263	96.85%	98.86%	-		
	WSJC	RKS/GLF6	126	95.91%	96.50%	-		

FIT-Asia/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

PBCS Monitoring Report								
Period: January to June 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
	WSJC	SIA/A359	54,620	99.60%	99.88%	1,899	96.38%	97.17%
	WSJC	SIA/A388	23,206	99.86%	99.99%	329	97.02%	97.27%
	WSJC	SIA/B77W	69,820	97.19%	99.41%	1,676	98.12%	98.87%
	WSJC	SLK/B738	27,666	99.22%	99.64%	490	93.19%	94.59%
	WSJC	THA/B744	13,382	97.58%	99.14%	610	96.87%	97.71%
	WSJC	THA/B789	6,047	99.33%	99.97%	325	98.28%	98.74%
	WSJC	UAE/B77W	9,962	98.03%	99.39%	227	97.28%	97.93%
	WSJC	UPS/B744	973	97.07%	98.89%	-		
	WSJC	V8B/B748	141	97.21%	97.71%	-		
	WSJC	VQB/GLEX	112	95.09%	97.49%	-		

FIT-Asia/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

Report date	18 June 2020
Period of observed non-compliance	July – December 2019
Reporting air navigation service provider (ANSP)	CAAS
Reporting to regional monitoring agency (RMA)	
Non-compliance type (fleet or individual airframe)	Fleet
ANSP notes	

ANSP Monitoring Results:

PBCS Monitoring Report								
Period: July to December 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
Fleet Performance								
	WSJC	AAR/B744	1,721	96.05%	99.11%	138	98.11%	98.52%
	WSJC	AAR/B772	126	95.01%	98.64%	-		
	WSJC	ACA/A333	106	94.37%	100%	-		
	WSJC	AIC/B788	1,243	98.62%	99.47%	120	97.73%	98.36%
	WSJC	AJX/B789	5,704	99.06%	99.75%	480	97.23%	97.31%
	WSJC	ANA/B77W	2,129	98.07%	99.77%	192	98.74%	98.92%

FIT-ASIA/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

PBCS Monitoring Report								
Period: July to December 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
	WSJC	ANA/B788	171	93.86%	96.75%	-		
	WSJC	ANA/B78X	2,732	99.34%	100%	263	98.50%	98.53%
	WSJC	AZG/B744	140	86.67%	93.14%	-		
	WSJC	CAL/A333	10,148	99.23%	99.66%	550	97.62%	98.86%
	WSJC	FDX/B752	348	96.86%	97.58%	-		
	WSJC	FDX/B77L	3,048	96.68%	99.09%	166	94.95%	96.99%
	WSJC	FDX/MD11	1,156	97.28%	98.68%	-		
	WSJC	JAL/B772	15,404	93.94%	98.33%	1,555	99.45%	99.76%
	WSJC	KAL/A333	2,738	98.39%	99.47%	204	97.90%	98.72%
	WSJC	KLM/B772	322	95.50%	98.62%	-		
	WSJC	MAS/A332	5,027	99.57%	99.70%	315	97.67%	98.10%
	WSJC	PAL/A321	3,326	97.47%	98.78%	537	99.16%	99.69%

FIT-Asia/10
Appendix E to The Report

PBCS ANSP NON-COMPLIANCE REPORT FORM – (VERSION 1 2/14/18)

PBCS Monitoring Report								
Period: July to December 2019								
Color Key:								
	Meets criteria							
	Accepted but below criteria							
	Under criteria							
State of Registry	Data Source (FIR)	Operator/Aircraft Type	ADS-C downlink Message Counts	95% RSP 180 benchmark ASP <=90 sec	99.9% RSP 180 benchmark ASP <= 180 sec	CPDLC Transaction Counts (WILCO Received)	95% RCP 240 benchmark ACP <= 180 sec	99.9% RCP 240 benchmark ACP <=210 sec
	WSJC	QFA/A333	3,985	99.41%	99.87%	353	97.01%	97.57%
	WSJC	SIA/A359	32,332	99.53%	99.88%	3,562	98.27%	98.90%
	WSJC	SLK/B738	15,191	98.63%	99.37%	808	93.66%	95.42%
	WSJC	THA/B744	5,357	96.98%	98.84%	737	97.05%	97.69%