



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

FANS1/A PERFORMANCE REPORT OF INDIA

(Presented by AIRPORTS AUTHORITY OF INDIA)

SUMMARY

This paper presents the FANS1/A Performance observed in the Chennai Oceanic FIR VOMF during the period 1st January to 31st December 2019, measured against the CPDLC RCP240 and ADS-C RSP180 specifications.

1. INTRODUCTION

1.1 BOBASMA conducted the annual End-to-End Safety and system performance monitoring of the Chennai ATS Data link ground system in India. Data extracted from the Chennai data link ground system for the period 1st January to 31st December 2019 were used to measure FANS1/A system performance against the CPDLC RCP240 and ADS-C RSP180 specifications as per guidelines contained in DOC9869.

2. DISCUSSION

ADS-C RSP180

2.1 Not much of a performance change from that observed in 2018.

95% Benchmark RSP<=90 sec	99.9% Benchmark RSP<=180 sec
97.04	98.80

Table 1: RSP180 All RGS

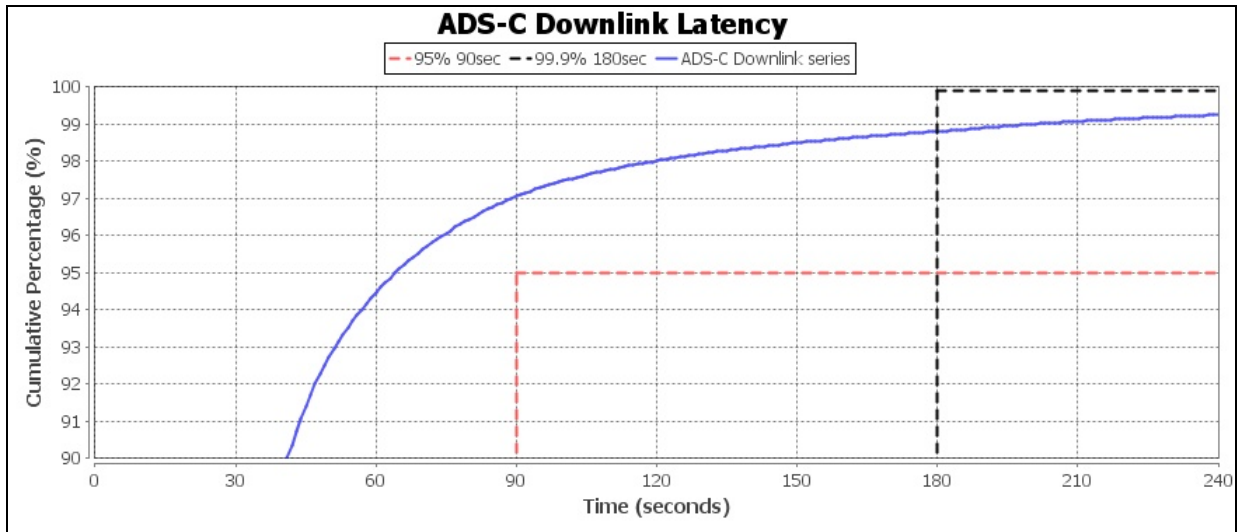


Figure 1: VOMF RSP180 All RGS

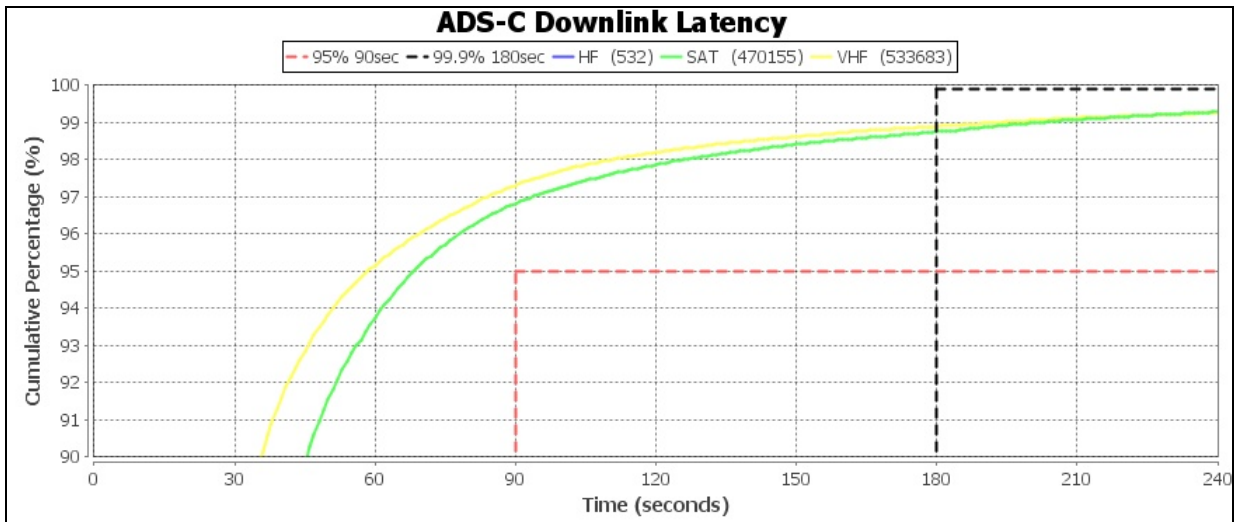


Figure 2: VOMF RSP180 by RGS Type

FIR	VOMM					
Criteria	RSP180					
Period	Jan-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	249038	96.66%	98.67%	221117	96.99%	98.82%
VHF	263968	96.94%	98.70%	269715	97.66%	99.07%
HF	247	36.11%	53.24%	285	45.38%	60.58%
ALL	513253	96.77%	98.66%	491117	97.33%	98.94%

Table 2: VOMF RSP180 by Media Type




FIR		VOMM					
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	
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES with message counts >100 recorded)					
APK1	SAT	224357	96.96%	98.75%	200940	97.44%	98.93%
EUA1	SAT	1409	93.97%	98.62%	1791	95.64%	98.78%
IG1	SAT	1092	83.88%	94.60%	1192	79.87%	94.13%
IGW1	SAT	20739	95.44%	98.44%	16291	93.43%	98.13%
XXF	SAT	1435	79.86%	93.80%	886	85.21%	94.58%

Table 3: VOMF RSP180 by SATCOM RGS




FIR		VOMM					
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	
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES with message counts >100 recorded)					
APK2	VHF	50817	94.73%	97.31%	30263	95.60%	97.86%
BLR	VHF	9079	99.63%	99.81%	8753	99.68%	99.77%
BLR1	VHF	7571	99.82%	99.95%	8681	99.57%	99.79%
BLR2	VHF	6507	99.76%	99.86%	5988	99.35%	99.71%
BOM	VHF	2033	98.84%	99.85%	1082	98.15%	99.85%
BOM1	VHF	376	100.00%	100.00%	169	98.15%	99.11%
BOM2	VHF	2468	98.93%	99.78%	1834	99.08%	99.69%
BTJ	VHF	1530	98.89%	99.66%	16610	94.89%	97.77%
BTJ1	VHF	6437	91.10%	94.97%	729	99.37%	99.86%

Table 4: VOMM RSP180 by VHF RGS

FIR	VOMM					
Criteria	RSP180					
Period	Jan-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)						
AFL/A333	1622	97.30%	98.79%	498	96.01%	97.65%
AFL/B77W	681	95.48%	98.77%			
AFR/A332	277	99.79%	100.00%	284	100.00%	100.00%
AFR/B772	331	99.21%	100.00%	161	99.59%	100.00%
AFR/B77W	3814	96.59%	98.97%	2868	97.35%	99.18%
AFR/B789				103	100.00%	100.00%
AIC/A20N				717	76.15%	85.50%
AIC/A320	551	84.45%	89.02%	429	69.15%	79.02%
AIC/B744	175	94.86%	100.00%	148	100.00%	100.00%
AIC/B788	1180	99.12%	99.72%	1129	98.89%	99.53%

Table 5: VOMF RSP180 by Aircraft Operator/Type

CPDLC RCP240

2.2 No significant change observed from that of 2018.

95% Benchmark RCP<=120 sec	99.9% Benchmark RCP<=150 sec
99.50	99.71

Table 6: VOMF RCP240 ACTP by Media Type

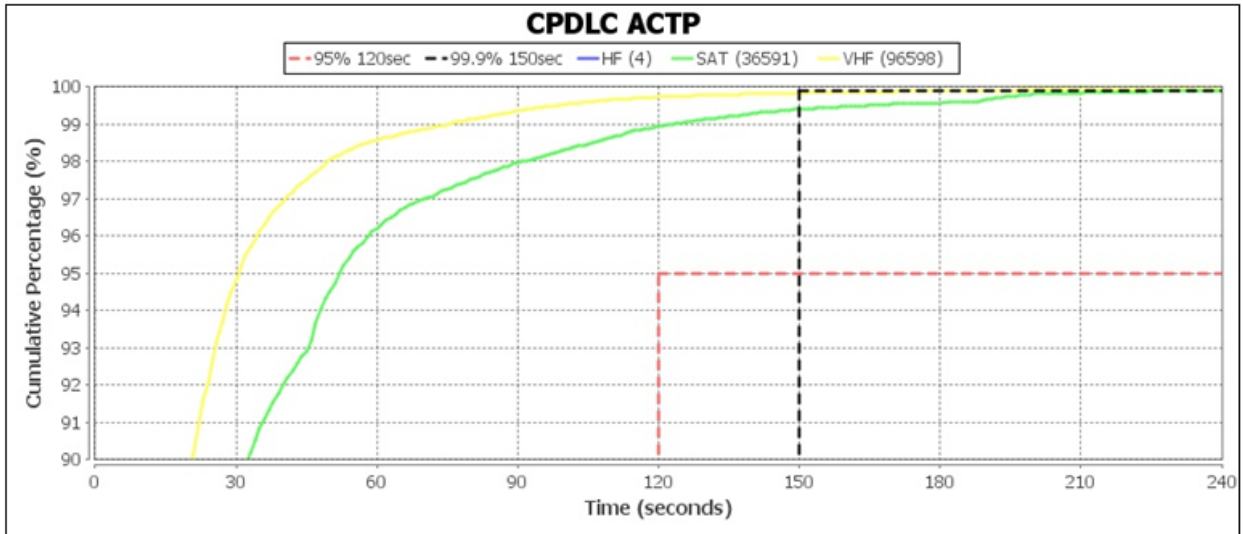


Figure 3: VOMF RCP240 ACTP by Media Type

95% Benchmark RCP<=180 sec	99.9% Benchmark RCP<=210 sec
99.29	99.55

Table 7: VOMF RCP240 ACP by Media Type

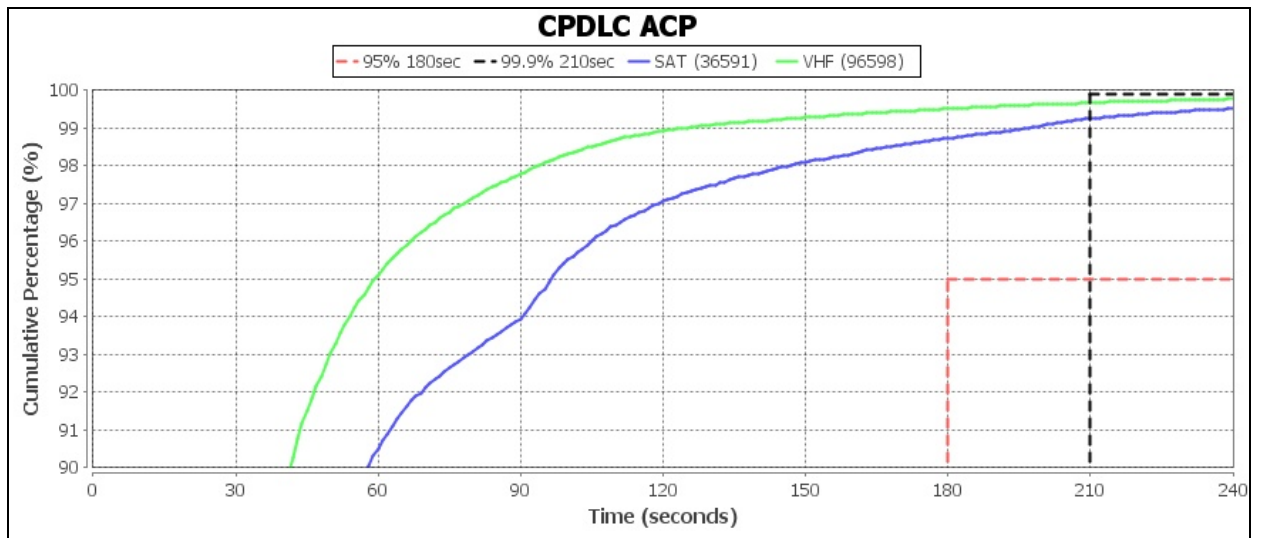


Figure 4: VOMF RCP240 ACP by Media Type

FIR		VOMM									
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	19002	98.85%	99.03%	99.32%	99.43%	17589	98.59%	98.93%	99.17%	99.39%	
VHF	48473	99.54%	99.73%	99.69%	99.83%	48125	99.46%	99.72%	99.63%	99.83%	
HF											
ALL	67475	99.34%	99.53%	99.59%	99.71%	65714	99.23%	99.51%	99.50%	99.71%	
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES with message counts >100)									
APK1	SAT	18614	98.86%	99.06%	99.32%	99.45%	17237	98.64%	98.89%	99.20%	99.38%
IGW1	SAT	220	100.00%	99.91%	100.00%	100.00%	191	99.99%	99.43%	100.00%	100.00%
APK2	VHF	4063	98.74%	98.87%	99.28%	99.23%	2692	97.55%	98.43%	98.44%	99.11%
BLR	VHF	3248	99.90%	100.00%	99.95%	100.00%	2754	99.74%	99.93%	99.83%	99.94%
BLR1	VHF	4515	99.75%	99.99%	99.83%	100.00%	4444	99.57%	99.96%	99.66%	99.98%
BLR2	VHF	3665	99.70%	100.00%	99.75%	100.00%	2642	99.56%	99.96%	99.66%	99.97%
BOM	VHF	242	100.00%	100.00%	100.00%	100.00%	143	100.00%	100.00%	100.00%	100.00%

Table 8: VOMF RCP240 by Media Type and RGS

FIR		VOMM										
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
By Aircraft Operator/Type (only message counts >100 recorded)												
AFL/A333	157	98.17%	98.34%	98.34%	98.60%	99.47%						
AFL/B77W	125	99.45%	98.83%	98.83%	100.00%	95.11%						
AFR/B77W	589	99.08%	98.93%	99.54%	99.74%	98.39%	463	99.28%	99.18%	99.63%	99.66%	
AIC/A320	101	98.97%	98.63%	99.09%	98.89%	97.15%						
AIC/B788	209	99.84%	99.66%	100.00%	99.81%	99.58%	236	99.49%	100.00%	99.85%	100.00%	
ALK/A20N	224	99.43%	99.42%	100.00%	99.65%	99.20%	298	99.30%	99.18%	99.52%	99.34%	
ALK/A21N	396	99.62%	99.61%	99.72%	99.83%	97.54%	608	98.75%	99.26%	99.61%	99.33%	
ALK/A332	303	99.92%	99.79%	100.00%	99.88%	98.65%	234	99.24%	100.00%	99.63%	100.00%	
ALK/A333	334	98.97%	100.00%	99.15%	100.00%	97.72%	351	98.93%	99.38%	99.72%	99.84%	

BAW/A388	546	99.63%	99.95%	99.84%	100.00%	98.38%	377	99.46%	99.80%	99.78%	100.00%	97.70%
BAW/B77W	616	98.86%	99.13%	99.24%	99.47%	97.50%	403	98.85%	99.17%	99.51%	99.57%	97.27%
BAW/B788	276	99.95%	99.47%	100.00%	99.81%	99.46%	239	99.60%	99.36%	99.64%	99.59%	99.37%
BAW/B789	590	99.50%	99.36%	99.55%	99.53%	99.19%	367	98.66%	98.73%	99.41%	99.18%	98.47%
BOX/B77L	360	100.00%	100.00%	100.00%	100.00%	98.94%	370	99.18%	99.42%	99.30%	99.61%	98.92%
CCA/B77W	140	97.30%	94.98%	97.45%	97.20%	97.53%	137	99.13%	100.00%	100.00%	100.00%	98.22%

Table 9: VOMF RCP240 by Operator and Type

2.3 **Attachments A, B, C and D** contain the following 2019 performance reports of VOMF using the standard templates.

Attachment A - ADS-C analysis by media type and RGS.

Attachment B - ADS-C analysis by aircraft operator and type.

Attachment C - CPDLC analysis by media type and RGS.

Attachment D - CPDLC analysis by aircraft operator and type.

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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Attachment A

ADS/C Analysis by Media type and RGS

FIR		VOMM					
Criteria		RSP180					
Period		Jan-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	
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BLR	VHF	9079	99.63%	99.81%	8753	99.68%	99.77%
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BOM	VHF	2033	98.84%	99.85%	1082	98.15%	99.85%
BOM1	VHF	376	100.00%	100.00%	169	98.15%	99.11%
BOM2	VHF	2468	98.93%	99.78%	1834	99.08%	99.69%
BTJ	VHF	1530	98.89%	99.66%	16610	94.89%	97.77%
BTJ1	VHF	6437	91.10%	94.97%	729	99.37%	99.86%
CJB1	VHF	655	99.70%	99.71%	2882	99.48%	99.62%
CMB1	VHF	1570	99.53%	99.57%	4120	99.57%	99.72%
COK1	VHF	2012	99.76%	99.85%	1634	93.51%	98.04%
EUA2	VHF	1045	91.87%	96.89%	11540	98.60%	99.30%
GOI1	VHF	11377	98.95%	99.55%	21497	99.14%	99.76%
HKT	VHF	20824	98.72%	99.61%	855	99.75%	99.96%
HKTV	VHF	702	99.69%	100.00%	3459	99.87%	99.99%
HYD	VHF	3263	99.52%	99.89%	571	99.21%	100.00%
HYD1	VHF	1162	99.29%	99.76%	15763	97.32%	98.48%
IOR6	VHF	918	94.58%	97.25%			

IXZ1	VHF	4852	98.26%	98.77%	786	99.11%	99.76%
KDT	VHF	821	98.81%	99.77%	10105	98.35%	99.56%
MAA	VHF	7848	98.39%	99.37%	19410	99.01%	99.56%
MAA1	VHF	15177	99.08%	99.55%	250	100.00%	100.00%
MLE1	VHF	121	100.00%	100.00%	223	100.00%	100.00%
NAG1	VHF	709	99.42%	99.86%	1139	97.43%	98.03%
PNQ1	VHF	1118	98.68%	99.14%	160	96.20%	97.58%
TRV	VHF	1310	99.79%	99.89%	2730	99.69%	99.88%
TRV1	VHF	1365	99.87%	99.94%	2130	99.91%	99.93%
USM	VHF	215	99.56%	100.00%	444	99.40%	99.99%
VTZ1	VHF	2785	99.64%	99.76%	4080	98.18%	99.22%
XXA	VHF	67019	96.78%	99.32%	69021	97.73%	99.61%
XXI	VHF	575	93.33%	96.70%	1067	94.49%	96.62%
XXP	VHF	16902	92.35%	95.78%	20399	95.40%	97.74%
H06	HF	169	31.56%	46.30%	225	44.59%	60.67%

Attachment - B

ADS-C Analysis by Aircraft operator and Type

FIR	VOMM					
Criteria	RSP180					
Period	Jan-June 2019			July-December 2019		
Colour Key	Message Counts	95% % <= 90sec	99.90% % <= 180sec	Message Counts	95% % <= 90sec	99.90% % <= 180sec
<p>Meets Criteria</p> <p>99.0%-99.84%</p> <p>Under Criteria</p>						
By Aircraft Operator/Type (only message counts >100 recorded)						
AFL/A333	1622	97.30%	98.79%	498	96.01%	97.65%
AFL/B77W	681	95.48%	98.77%			
AFR/A332	277	99.79%	100.00%	284	100.00%	100.00%
AFR/B772	331	99.21%	100.00%	161	99.59%	100.00%
AFR/B77W	3814	96.59%	98.97%	2868	97.35%	99.18%
AFR/B789				103	100.00%	100.00%
AIC/A20N				717	76.15%	85.50%
AIC/A320	551	84.45%	89.02%	429	69.15%	79.02%
AIC/B744	175	94.86%	100.00%	148	100.00%	100.00%
AIC/B788	1180	99.12%	99.72%	1129	98.89%	99.53%
AIZ/A21N	111	79.28%	97.53%			
AIZ/B763	501	99.64%	100.00%	218	94.54%	96.76%
ALK/A20N	1872	96.23%	97.66%	2588	95.05%	97.41%
ALK/A21N	3215	97.36%	98.72%	4806	98.24%	99.00%
ALK/A332	2612	99.14%	99.41%	2199	98.28%	98.46%
ALK/A333	3110	98.26%	98.77%	3076	98.60%	98.88%
AOJ/GLF5	133	92.11%	98.96%	165	90.05%	96.52%
AZG/B744	648	87.04%	96.47%	766	86.42%	94.54%
AZG/B748	621	98.01%	99.68%	153	100.00%	100.00%
BAW/A388	4432	99.14%	99.77%	2966	99.41%	99.57%
BAW/ B772	344	97.31%	98.95%			
BAW/B77W	3838	94.75%	97.80%	2664	96.58%	98.99%
BAW/B788	453	98.74%	99.67%	307	95.68%	98.12%
BAW/B789	3798	98.83%	99.68%	2080	97.84%	99.12%
BOX/B77L	2516	99.94%	99.97%	2573	99.61%	99.88%
CBJ/A333	334	95.99%	98.53%	264	99.91%	100.00%
CCA/ A332	188	99.50%	99.60%	142	99.05%	99.40%
CCA/B77W	1339	98.25%	99.87%	1347	98.96%	99.93%
CES/A332	1513	98.31%	99.45%	896	98.72%	99.33%

FIT-Asia/10 – WP/09
Attachment B

CESA333	1735	97.12%	99.17%	1967	95.53%	98.14%
CFG/B763	1131	97.11%	98.32%	513	97.08%	98.81%
CLX/B744	308	84.09%	94.09%	522	90.23%	94.52%
CLX/B748	1283	98.58%	99.18%	568	99.49%	99.67%
CPA/A333	5263	91.18%	94.43%	3945	92.80%	95.61%
CPA/A359				109	100.00%	100.00%
CPA/B744	3295	83.22%	90.44%	3397	89.81%	95.00%
CPA/B773	104	89.42%	95.45%			
CPA/B77W	4515	89.10%	95.46%	4608	88.95%	95.25%
CRK/A333	1483	99.81%	99.95%	1432	99.86%	99.92%
CSN/A332	1981	98.79%	99.36%	2051	98.49%	99.38%
CSN/A333	967	90.52%	95.10%	867	94.58%	97.51%
DLH/A343	801	99.42%	100.00%	830	99.82%	99.98%
DLH/A359	3279	97.50%	99.47%	2418	99.17%	99.97%
DLH/A388	4248	96.56%	98.70%	2160	98.47%	99.51%
DLH/B748	120	97.61%	100.00%			
EDW/A343	788	98.46%	99.83%	319	98.28%	99.38%
ELY/B744	869	95.74%	98.91%	639	91.97%	99.02%
ELY/B772	426	98.84%	99.38%	578	99.28%	99.85%
ELY/B789				315	99.72%	100.00%
ETD/A320	1308	97.67%	99.48%	1264	98.84%	99.20%
ETD/A321	2712	97.89%	99.05%	3517	97.92%	99.13%
ETD/A332	8413	97.56%	98.77%	7094	98.94%	99.55%
ETD/A388	839	99.98%	100.00%	1348	100.00%	100.00%
ETD/B77L	590	97.63%	99.26%	647	95.67%	98.24%
ETD/B77W	5921	97.18%	98.68%	8899	97.42%	98.95%
ETD/B787				295	99.58%	100.00%
ETD/B788				449	100.00%	100.00%
ETD/B789	9061	99.18%	99.61%	9108	98.96%	99.51%
ETH/B77L	2581	98.80%	99.81%	3675	99.17%	99.93%
ETH/B77W	1531	99.35%	99.90%	1617	99.01%	99.92%
ETH/B788	4418	97.92%	99.09%	4893	97.98%	99.27%
ETH/B789	268	98.56%	99.74%	237	99.41%	99.60%
FDX/B77L	635	92.76%	97.80%	740	92.36%	96.67%
FDX/MD11	184	92.81%	96.80%	202	96.86%	99.61%
FIN/A359	3208	98.44%	99.40%	742	99.90%	100.00%
GEC/MD11	368	87.23%	98.37%	232	96.27%	100.00%
GFA/A321	525	100.00%	100.00%	274	99.67%	99.86%
GIA/A332	688	99.88%	100.00%	2289	99.86%	99.96%
GIA/A333				148	99.21%	100.00%
GIA/B744				1257	98.33%	99.22%

GIA/B77W	4789	97.33%	99.11%	3965	97.33%	98.86%
GTI/B744	119	85.92%	100.00%			
HAD/A333	1396	93.05%	95.15%	1481	96.35%	97.94%
JAI/A332	216	98.07%	99.45%			
JAI/A333	299	94.37%	96.06%			
KAC/A332	906	99.41%	100.00%	919	99.05%	99.76%
KAC/B77W	286	98.78%	99.90%			
KAL/A332	457	98.03%	98.51%	583	98.90%	99.95%
KAL/A333	458	98.98%	100.00%	399	98.89%	99.80%
KLM/B772	2126	92.94%	97.27%	666	90.93%	96.36%
KLM/B77W	5302	94.96%	98.11%	2915	95.61%	98.52%
KNE/A388				1676	98.99%	99.63%
KNE/B744				118	79.24%	84.76%
KQA/B788	1814	99.17%	99.65%	2059	98.83%	99.46%
LNI/A333	762	97.28%	97.57%	793	99.51%	99.88%
LOT/B788	1822	97.20%	99.43%	957	98.97%	99.97%
LOT/B789	267	98.66%	99.64%	338	100.00%	100.00%
MAS/A332	1846	96.85%	98.04%	1710	96.01%	97.13%
MAS/A333	8235	95.01%	97.15%	6022	96.58%	97.91%
MAS/A359	8142	98.35%	99.50%	8812	99.00%	99.48%
MAS/A388	4383	97.39%	99.02%	8359	99.50%	99.83%
MAS/B738	26822	96.22%	98.39%	25965	95.78%	98.67%
MDG/A343				139	100.00%	100.00%
MMD/FA7X	109	98.60%	99.84%			
NAX/B788	608	96.72%	99.26%			
OMA/A332	2939	97.19%	98.51%	3405	98.94%	99.54%
OMA/A333	7960	98.08%	99.01%	7656	98.85%	99.44%
OMA/B788	833	98.29%	99.48%	335	99.63%	100.00%
OMA/B789	3066	98.44%	99.23%	1671	99.88%	99.95%
PAL/A333	700	99.72%	100.00%			
QFA/A388	4854	98.99%	99.58%	2656	98.40%	98.74%
QFA/B789	124	100.00%	100.00%	593	99.63%	100.00%
QQE/GLEX	104	100.00%	100.00%	107	99.07%	99.10%
QTR/A332	3799	97.76%	99.09%	3734	99.36%	99.79%
QTR/A333	5777	99.08%	99.75%	2068	99.80%	99.96%
QTR/A346	2512	99.47%	99.88%			
QTR/A350	338	99.76%	100.00%			
QTR/A359	9750	97.51%	98.72%	18715	99.22%	99.59%
QTR/A35K	3589	97.78%	98.82%	11383	99.30%	99.80%
QTR/A388	1607	99.81%	100.00%	2310	99.89%	100.00%


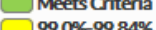
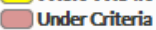
FIT-Asia/10 – WP/09
Attachment B

QTR/B77L	1914	90.39%	95.59%	3971	89.30%	96.10%
QTR/B77W	19402	90.89%	95.91%	24580	91.99%	96.70%
QTR/B788	18779	98.46%	99.43%	11968	98.21%	99.23%
RBA/A332				172	97.93%	98.83%
RBA/B788	1716	99.83%	99.99%			
RJA/B788	138	100.00%	100.00%			
ROJ/B737				131	100.00%	100.00%
RRR/A332				120	100.00%	100.00%
SAA/A343	213	99.56%	99.91%			
SAZ/CL60	186	98.07%	98.93%	163	99.39%	100.00%
SDM/B773				197	98.04%	100.00%
SDM/B77W	360	94.31%	97.69%			
SIA/A333	9089	98.65%	99.20%	8367	98.67%	99.03%
SIA/A359	27817	98.72%	99.86%	22124	99.29%	99.81%
SIA/A388	24584	98.56%	99.48%	13580	99.26%	99.71%
SIA/B744	4220	84.50%	92.68%	2654	91.75%	96.12%
SIA/B772	5619	98.06%	99.47%	2121	98.35%	99.87%
SIA/B773	1401	96.82%	99.25%	1415	96.78%	99.04%
SIA/B77W	20720	94.28%	97.36%	11155	93.80%	97.53%
SIA/B788				109	98.62%	100.00%
SLK/A320	3890	97.02%	98.78%	3447	95.91%	97.89%
SLK/B38M	2806	97.33%	98.96%			
SLK/B738	8383	99.52%	99.86%	11143	99.43%	99.69%
SVA/A332				367	95.42%	96.75%
SVA/A333	166	98.96%	100.00%	132	100.00%	100.00%
SVA/B744	1357	91.53%	97.90%	3204	91.23%	97.83%
SVA/B77W	3156	97.75%	99.47%	6514	98.30%	99.46%
SVA/B787				160	100.00%	100.00%
SVA/B788				403	100.00%	100.00%
SVA/B789	11918	98.24%	99.08%	11829	98.78%	99.39%
SWR/B77W	4244	98.41%	99.82%	3468	97.87%	99.58%
TBJ/CL60	152	90.39%	97.11%	137	99.65%	100.00%
TBJ/GLEX				116	99.53%	100.00%
TGW/B788	2300	99.61%	99.95%	4846	99.53%	99.85%
TGW/B789	1685	99.16%	99.69%	1957	99.48%	99.88%
THA/A333	2657	99.74%	99.92%	3165	99.79%	99.94%
THA/B772	4178	95.02%	98.23%	4280	95.84%	98.66%
THA/B773				328	93.98%	97.08%
THY/A332	551	99.31%	99.57%	525	99.49%	99.89%
THY/A333	6327	92.87%	96.10%	4294	94.41%	97.28%
THY/B77L	343	99.73%	100.00%	140	94.62%	99.20%

THY/B77W	5772	96.76%	98.84%	4617	96.01%	98.57%
THY/B789				2418	99.09%	99.88%
TOM/B788	111	99.48%	100.00%			
UAE/A388	25699	98.78%	99.66%	33424	99.17%	99.79%
UAE/B77L	1838	96.52%	99.77%	2165	97.64%	99.69%
UAE/B77W	40596	96.69%	99.52%	41223	97.41%	99.65%
UZB/B763	345	97.29%	100.00%	103	96.73%	99.22%
VJT/GLEX	541	92.61%	97.06%	797	95.96%	98.49%
VKG/A332	540	97.04%	99.58%			
XAX/A333	3686	90.78%	93.87%	2763	94.46%	96.61%

Attachment - C

CPDLC Analysis by Media type and RGS




FIR		VOMM									
Criteria		RCP240									
Period		Jan - Jun 2019					Jul - Dec 2019				
Colour Key   	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	19002	98.85%	99.03%	99.32%	99.43%	17589	98.59%	98.93%	99.17%	99.39%	
VHF	48473	99.54%	99.73%	99.69%	99.83%	48125	99.46%	99.72%	99.63%	99.83%	
HF											
ALL	67475	99.34%	99.53%	99.59%	99.71%	65714	99.23%	99.51%	99.50%	99.71%	
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES with message counts >100)									
APK1	SAT	18614	98.86%	99.06%	99.32%	99.45%	17237	98.64%	98.89%	99.20%	99.38%
IGW1	SAT	220	100.00%	99.91%	100.00%	100.00%	191	99.99%	99.43%	100.00%	100.00%
APK2	VHF	4063	98.74%	98.87%	99.28%	99.23%	2692	97.55%	98.43%	98.44%	99.11%
BLR	VHF	3248	99.90%	100.00%	99.95%	100.00%	2754	99.74%	99.93%	99.83%	99.94%
BLR1	VHF	4515	99.75%	99.99%	99.83%	100.00%	4444	99.57%	99.96%	99.66%	99.98%
BLR2	VHF	3665	99.70%	100.00%	99.75%	100.00%	2642	99.56%	99.96%	99.66%	99.97%
BOM	VHF	242	100.00%	100.00%	100.00%	100.00%	143	100.00%	100.00%	100.00%	100.00%
BOM2	VHF	138	99.79%	100.00%	100.00%	100.00%	235	99.53%	100.00%	100.00%	100.00%
BTJ	VHF	148	100.00%	100.00%	100.00%	100.00%					
BTJ1	VHF	232	97.68%	99.40%	99.38%	99.71%	992	97.94%	99.19%	98.48%	99.57%
CJB1	VHF	171	99.83%	100.00%	99.99%	100.00%	347	98.93%	100.00%	99.01%	100.00%
CMB1	VHF	108	99.53%	100.00%	99.67%	100.00%	235	99.68%	100.00%	99.71%	100.00%
COK1	VHF	595	99.87%	99.92%	99.90%	100.00%	1081	99.63%	99.97%	99.69%	100.00%
EUA2							101	96.48%	96.46%	98.13%	99.11%
GOI1	VHF	2585	99.57%	99.82%	99.60%	99.85%	2791	99.72%	99.84%	99.87%	100.00%
HKT	VHF	2633	99.59%	99.80%	99.78%	99.91%	2022	99.68%	99.82%	99.75%	99.90%
HYD	VHF	1523	99.80%	99.88%	99.91%	99.91%	1411	99.96%	100.00%	99.99%	100.00%
HYD1	VHF	523	99.73%	99.98%	99.81%	100.00%					
IXZ1	VHF	739	99.70%	99.89%	99.79%	99.93%	1881	99.95%	99.95%	99.95%	99.95%
MAA	VHF	2750	99.68%	99.71%	99.73%	99.74%	2361	99.68%	99.72%	99.88%	99.79%
MAA1	VHF	6604	99.62%	99.95%	99.66%	99.96%	6229	99.60%	99.91%	99.71%	99.95%
PNQ1	VHF	112	100.00%	100.00%	100.00%	100.00%	106	99.72%	100.00%	99.89%	100.00%
TRV	VHF	146	100.00%	100.00%	100.00%	100.00%	524	100.00%	100.00%	100.00%	100.00%

FIT-Asia/10 – WP/09
 Attachment C

TRV1							273	98.67%	100.00%	98.81%	100.00%
VTZ1	VHF	681	100.00%	100.00%	100.00%	100.00%	606	100.00%	100.00%	100.00%	100.00%
XXA	VHF	9682	99.49%	99.67%	99.75%	99.81%	11328	99.66%	99.74%	99.80%	99.82%
XXI	VHF	475	99.88%	99.98%	99.94%	100.00%	514	99.99%	99.98%	100.00%	100.00%
XXP	VHF	2453	99.56%	99.64%	99.51%	99.80%	2140	99.14%	99.02%	99.37%	99.53%

Attachment – D

CPDLC Analysis by Aircraft operator and Type

FIR	VOMM											
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)												
AFL/A333	157	98.17%	98.34%	98.34%	98.60%	99.47%						
AFL/B77W	125	99.45%	98.83%	98.83%	100.00%	95.11%						
AFR/B77W	589	99.08%	98.93%	99.54%	99.74%	98.39%	463	99.28%	99.18%	99.63%	99.66%	96.76%
AIC/A320	101	98.97%	98.63%	99.09%	98.89%	97.15%						
AIC/B788	209	99.84%	99.66%	100.00%	99.81%	99.58%	236	99.49%	100.00%	99.85%	100.00%	98.75%
ALK/A20N	224	99.43%	99.42%	100.00%	99.65%	99.20%	298	99.30%	99.18%	99.52%	99.34%	98.42%
ALK/A21N	396	99.62%	99.61%	99.72%	99.83%	97.54%	608	98.75%	99.26%	99.61%	99.33%	97.78%
ALK/A332	303	99.92%	99.79%	100.00%	99.88%	98.65%	234	99.24%	100.00%	99.63%	100.00%	97.88%
ALK/A333	334	98.97%	100.00%	99.15%	100.00%	97.72%	351	98.93%	99.38%	99.72%	99.84%	97.58%
BAW/A388	546	99.63%	99.95%	99.84%	100.00%	98.38%	377	99.46%	99.80%	99.78%	100.00%	97.70%
BAW/B77W	616	98.86%	99.13%	99.24%	99.47%	97.50%	403	98.85%	99.17%	99.51%	99.57%	97.27%
BAW/B788	276	99.95%	99.47%	100.00%	99.81%	99.46%	239	99.60%	99.36%	99.64%	99.59%	99.37%
BAW/B789	590	99.50%	99.36%	99.55%	99.53%	99.19%	367	98.66%	98.73%	99.41%	99.18%	98.47%
BOX/B77L	360	100.00%	100.00%	100.00%	100.00%	98.94%	370	99.18%	99.42%	99.30%	99.61%	98.92%
CCA/B77W	140	97.30%	94.98%	97.45%	97.20%	97.53%	137	99.13%	100.00%	100.00%	100.00%	98.22%
CES/A332	148	99.57%	100.00%	100.00%	100.00%	96.56%						
CES/A333	207	100.00%	99.90%	100.00%	100.00%	99.18%	215	99.99%	99.49%	100.00%	100.00%	100.00%
CPA/A333	720	99.66%	99.87%	99.73%	99.88%	97.67%	429	100.00%	100.00%	100.00%	100.00%	97.20%
CPA/B77W	634	98.55%	98.03%	99.12%	98.62%	98.11%	665	96.52%	95.69%	97.53%	97.10%	97.34%
CRK/A333	190	99.83%	100.00%	99.99%	100.00%	98.96%	210	100.00%	100.00%	100.00%	100.00%	98.87%
CSN/A332	252	99.90%	100.00%	100.00%	100.00%	99.50%	293	100.00%	99.88%	100.00%	99.99%	100.00%
DLH/A343	539	99.20%	99.62%	99.37%	99.88%	98.89%	637	99.99%	99.98%	100.00%	100.00%	98.35%
DLH/A359	464	99.34%	99.62%	99.59%	99.79%	97.33%	380	99.67%	99.52%	100.00%	99.61%	98.59%
DLH/A388	476	99.52%	99.79%	99.85%	99.89%	99.08%	237	99.45%	100.00%	99.59%	100.00%	99.20%
EDW/A343	102	99.68%	99.78%	99.85%	100.00%	99.33%						
ETD/A320	366	99.90%	100.00%	99.98%	100.00%	98.77%	267	100.00%	100.00%	100.00%	100.00%	97.63%
ETD/A321	485	100.00%	100.00%	100.00%	100.00%	97.53%	776	99.62%	100.00%	99.69%	100.00%	97.29%
ETD/A332	1337	99.66%	99.88%	99.75%	99.94%	97.91%	1361	99.13%	99.73%	99.36%	99.99%	97.43%
ETD/A388							237	100.00%	100.00%	100.00%	100.00%	98.31%
ETD/B77L	121	99.46%	99.02%	99.75%	100.00%	99.27%	155	99.32%	98.89%	100.00%	99.13%	100.00%
ETD/B77W	1024	99.11%	99.46%	99.29%	99.80%	98.05%	1520	99.03%	99.42%	99.26%	99.74%	97.72%

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Attachment D

ETD/B789	1657	99.33%	99.39%	99.73%	99.66%	98.28%	1632	99.14%	99.35%	99.46%	99.59%	98.53%
ETH/B77L	563	99.85%	100.00%	99.87%	100.00%	99.51%	867	99.81%	99.79%	99.86%	99.90%	99.34%
ETH/B77W	346	100.00%	100.00%	100.00%	100.00%	99.46%	384	99.88%	100.00%	100.00%	100.00%	99.09%
ETH/B788	934	99.70%	99.66%	99.72%	99.69%	99.71%	999	100.00%	99.84%	100.00%	100.00%	99.80%
FIN/A359	358	99.16%	99.42%	99.56%	99.64%	97.63%						
GFA/A321	125	100.00%	100.00%	100.00%	100.00%	98.58%						
GIA/A332							333	99.80%	100.00%	100.00%	100.00%	98.52%
GIA/B77W	546	99.85%	99.73%	99.90%	100.00%	98.63%	388	98.69%	98.45%	99.23%	99.25%	98.42%
HDA/A333	282	99.65%	99.92%	99.70%	100.00%	97.38%	274	99.06%	99.54%	99.35%	100.00%	95.26%
KAC/A332	168	100.00%	100.00%	100.00%	100.00%	96.83%	213	99.59%	100.00%	99.65%	100.00%	97.42%
KAL/A332							122	99.42%	99.38%	99.70%	99.63%	97.45%
KLM/B772	302	98.72%	98.31%	98.84%	99.12%	97.68%	103	98.98%	100.00%	100.00%	100.00%	97.94%
KLM/B77W	707	99.47%	100.00%	99.53%	100.00%	98.16%	362	99.76%	100.00%	100.00%	100.00%	97.74%
KNE/A388							274	100.00%	100.00%	100.00%	100.00%	100.00%
KQA/B788	245	100.00%	100.00%	100.00%	100.00%	99.66%	238	98.80%	100.00%	99.26%	100.00%	98.77%
LNI/A333							105	99.28%	100.00%	99.41%	100.00%	97.41%
LOT/B788	255	99.63%	99.66%	99.74%	99.77%	98.92%	118	98.74%	98.03%	99.11%	100.00%	98.62%
MAS/A332	244	98.30%	98.35%	98.92%	98.89%	98.71%	227	98.77%	99.41%	98.89%	99.60%	98.05%
MAS/A333	1331	99.10%	99.24%	99.40%	99.30%	98.35%	1130	99.26%	99.57%	99.52%	99.73%	97.43%
MAS/A359	1167	98.77%	99.34%	99.36%	99.67%	98.11%	1164	98.94%	99.04%	99.68%	99.41%	98.71%
MAS/A388	594	99.77%	99.83%	99.87%	100.00%	99.36%	945	99.34%	100.00%	99.65%	100.00%	98.59%
NAX/B788	114	98.38%	98.30%	98.58%	99.80%	97.59%						
OMA/A332	369	98.46%	100.00%	98.92%	100.00%	95.12%	412	98.35%	99.79%	98.46%	99.92%	96.36%
OMA/A333	1110	98.48%	99.97%	98.91%	100.00%	95.41%	1274	98.55%	99.74%	99.00%	99.83%	96.70%
OMA/B788	160	99.90%	99.86%	100.00%	100.00%	99.65%						
OMA/B789	603	99.77%	99.79%	99.84%	99.85%	99.51%	222	100.00%	100.00%	100.00%	100.00%	99.49%
QFA/A388	606	99.40%	99.91%	99.65%	100.00%	97.46%	341	99.12%	99.85%	99.43%	100.00%	96.77%
QFA/B789							106	100.00%	100.00%	100.00%	100.00%	96.93%
QTR/A332	689	99.16%	99.71%	99.23%	99.74%	96.61%	722	99.10%	99.54%	99.43%	100.00%	97.65%
QTR/A333	966	99.08%	99.77%	99.17%	99.90%	97.77%	559	98.74%	99.84%	99.24%	100.00%	96.87%
QTR/A346	380	98.88%	100.00%	99.16%	100.00%	97.19%						
QTR/A359	1449	99.13%	99.61%	99.55%	99.83%	98.17%	2572	99.45%	99.77%	99.63%	99.96%	98.09%
QTR/A35K	618	99.57%	99.69%	99.64%	99.75%	98.75%	1599	99.02%	99.25%	99.39%	99.57%	97.75%
QTR/A388	172	99.55%	99.79%	99.82%	99.97%	99.08%	415	100.00%	100.00%	100.00%	100.00%	98.36%
QTR/B77L	302	98.41%	98.41%	98.92%	99.08%	96.85%	694	97.61%	97.99%	98.39%	98.62%	96.69%
QTR/B77W	3009	97.55%	98.32%	98.44%	98.93%	97.27%	3806	97.16%	97.64%	98.08%	98.61%	96.48%
QTR/B788	2963	99.66%	99.58%	99.80%	99.81%	98.92%	1982	99.55%	99.64%	99.59%	99.83%	98.74%
RBA/B788	262	99.22%	99.66%	99.49%	99.86%	97.79%						
SIA/A333	1198	99.68%	99.68%	99.88%	99.72%	98.58%	1109	99.78%	99.84%	99.85%	99.88%	98.60%
SIA/A359	3911	99.13%	99.40%	99.44%	99.82%	98.34%	3016	99.33%	99.58%	99.59%	99.76%	98.44%
SIA/A388	3109	99.36%	99.58%	99.52%	99.84%	98.36%	1552	98.84%	99.48%	99.26%	99.88%	97.62%
SIA/B772	852	99.43%	99.09%	99.69%	99.55%	99.32%	321	100.00%	99.84%	100.00%	100.00%	100.00%
SIA/B773	302	99.98%	100.00%	100.00%	100.00%	98.73%	375	98.56%	99.29%	98.71%	99.71%	97.50%

SIA/B77W	3328	99.07%	98.86%	99.56%	99.27%	99.13%	1862	98.31%	98.25%	99.14%	98.69%	98.68%
SLK/A320	384	99.25%	99.41%	99.42%	99.71%	97.66%	384	99.06%	99.38%	99.50%	100.00%	97.22%
SVA/B77W	655	99.59%	99.73%	100.00%	99.91%	97.81%	1108	99.46%	99.56%	99.65%	99.70%	97.56%
SVA/B789	1633	99.50%	99.52%	99.69%	99.62%	98.98%	1538	98.79%	99.04%	99.34%	99.44%	97.95%
SWR/B77W	628	99.80%	99.51%	100.00%	99.90%	99.36%	551	100.00%	100.00%	100.00%	100.00%	98.91%
TGW/B766	324	100.00%	99.71%	100.00%	99.92%	100.00%						
TGW/B788							685	98.65%	99.14%	99.08%	99.54%	98.10%
TGW/B789	211	99.90%	99.90%	100.00%	100.00%	99.33%	282	98.79%	99.75%	99.14%	100.00%	97.72%
THA/A333	356	99.59%	100.00%	99.72%	100.00%	98.61%	551	99.73%	99.79%	99.88%	100.00%	98.97%
THA/B772	942	98.82%	99.08%	99.32%	99.41%	98.78%	1018	98.45%	98.33%	98.94%	98.55%	99.31%
THY/A332	197	99.82%	99.81%	100.00%	100.00%	98.31%	209	99.10%	100.00%	100.00%	100.00%	96.60%
THY/A333	568	99.56%	99.46%	100.00%	99.69%	98.24%	358	98.33%	97.86%	98.50%	99.28%	96.79%
THY/B77W	959	99.33%	99.10%	99.49%	99.34%	98.44%	626	98.93%	99.24%	99.55%	99.56%	98.26%
THY/B789							276	99.73%	100.00%	100.00%	100.00%	96.83%
UAE/A388	3392	99.77%	99.95%	99.85%	99.97%	99.62%	4956	99.92%	99.94%	99.97%	99.99%	99.46%
UAE/B77L	267	100.00%	100.00%	100.00%	100.00%	99.68%	453	99.73%	100.00%	100.00%	100.00%	98.01%
UAE/B77W	7491	99.59%	99.71%	99.75%	99.78%	98.89%	8107	99.72%	99.83%	99.80%	99.90%	98.85%
XAX/A333	528	97.28%	98.47%	98.70%	98.65%	97.20%	294	97.52%	98.25%	97.76%	99.26%	96.15%