



ICAO

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(FIT-Asia/11)

Video Teleconference, 23 – 27 August 2021

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

DATA LINK PERFORMANCE REPORT FOR KUALA LUMPUR FIR

(Presented by Malaysia)

SUMMARY

This paper presents data link performance data for January to December 2020 for Kuala Lumpur FIR.

1. INTRODUCTION

1.1 This paper presents the data link performance for Kuala Lumpur (WMFC) FIR from January to December 2020. Overall performance observed in 2020 against both RSP180 and RCP240 specifications is acceptable. Availability was affected by number of outages through the period.

2. DISCUSSION

ADS-C RSP 180

2.1 This section covers the Downlink Latency measurement for ADS-C messages sent within WMFC FIR for the whole year of 2020, categorized by data link media type and remote ground station (RGS) ground earth station (GES). The performance is measured against RSP180 performance criteria of 90 and 180 seconds for 95 and 99.9 percent criterion respectively. The Downlink Latency for messages sent via Satellite and VHF meet the 95 percent criterion but marginally fall below the 99.9 percent criterion. Only Downlink Latency for message sent via HF did not meet the 95 percent criterion but meet the 99.9 percent criterion.

2.2 **Table 1** summarizes RSP180 ADS-C Downlink Latency for messages sent within the WMFC FIR for the whole year of 2020. **Table 2** and **3** present ADS-C Downlink Latency by Remote Ground Station (RGS) Ground Earth Station (GES) with respect to VHF Data Link (VDL) and Satellite Communication (SATCOM).

FIR	WMFC					
Criteria	RSP180					
Period	January-June 2020			July-December 2020		
Colour Key	Message Counts	95% %<=90sec	99.90% %<=180sec	Message Counts	95% %<=90sec	99.90% %<=180sec
■ Meet Criteria						
■ 99.0% - 99.90%						
■ Under Criteria						
By Media Type						
SATCOM	71,241	98.01%	99.58%	24,376	98.36%	99.74%
VHF	77,853	98.01%	99.58%	32,780	99.35%	99.81%
HF	13	67.52%	100.00%	10	93.11%	100.00%
ALL	149,107	98.67%	99.67%	57,166	98.93%	99.78%

Table 1: WMFC RSP180 by Media Type

Designat	Typ	(only RGS/GES with message counts >100 recorded)					
BTJ1	VHF	8165	97.17%	98.98%	437	95.42%	99.16%
HDY	VHF	3268	99.06%	99.62%	2,507	99.16%	99.60%
HDYV	VHF	1008	99.34%	99.90%	302	100.00%	100.00%
HKT	VHF	20214	99.49%	99.89%	7,017	99.37%	99.90%
HKTV	VHF	299	98.36%	99.37%	218	99.57%	99.90%
IXZ1	VHF	11346	99.68%	99.95%	4,516	99.40%	99.84%
KBR1	VHF	1274	99.57%	99.73%	908	100.00%	100.00%
KBV	VHF	770	100.00%	100.00%	666	99.76%	100.00%
KNO1	VHF	1043	100.00%	100.00%	309	98.24%	99.47%
KUA	VHF	226	97.36%	97.67%	94	95.84%	96.83%
KUA1	VHF	416	99.70%	100.00%	277	98.75%	99.79%
KUL	VHF	474	99.03%	99.60%	517	98.89%	99.33%
KUL1	VHF	1617	99.82%	99.87%	498	99.95%	100.00%
KUL2	VHF	1147	99.59%	99.72%	683	99.90%	100.00%
KULA	VHF	2843	98.80%	99.63%	1,171	99.06%	99.92%
NAW	VHF	64	100.00%	100.00%	110	99.18%	100.00%
PEN	VHF	158	99.09%	100.00%	123	95.60%	97.34%
PEN1	VHF	3230	99.97%	99.98%	2,210	99.81%	100.00%
SIN	VHF	3628	99.46%	99.82%	1,850	99.60%	99.89%
SIN1	VHF	404	100.00%	100.00%	359	100.00%	100.00%
SIN2	VHF	943	100.00%	100.00%	315	100.00%	100.00%
SIN7	VHF	1933	100.00%	100.00%	998	99.89%	100.00%
SIN8	VHF	3330	99.88%	100.00%	1,926	99.72%	99.96%
SIN9	VHF	1154	99.90%	100.00%	775	99.92%	100.00%
SINV	VHF	1,865	99.57%	100.00%	281	99.94%	100.00%
SZB	VHF	850	97.83%	98.51%	407	97.02%	98.54%
SZB1	VHF	3,988	99.42%	99.91%	2,242	99.46%	99.82%
TGG1	VHF	278	99.75%	100.00%	366	99.76%	100.00%
USM	VHF	1,478	99.42%	99.63%	601	99.41%	99.80%
USMV	VHF	194	100.00%	100.00%	2	100.00%	100.00%

Table 2: WMFC RSP180 by VDL HF RGS

By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designat	Type	(only RGS/GES with message counts >100 recorded)					
AOR1	SAT	6210	99.57%	99.82%	2,954	99.84%	99.98%
APK1	SAT	43419	98.15%	99.69%	18,342	98.30%	99.81%
APK2	SAT	6801	97.27%	99.17%	807	93.93%	97.89%
IGW1	SAT	1577	92.07%	98.35%	454	96.70%	99.29%
LGK1	SAT	455	99.68%	100.00%	183	100.00%	100.00%
XSP	SAT	466	99.26%	99.64%	500	99.07%	99.82%
XXA	SAT	10,931	97.84%	99.39%	1,136	98.94%	99.49%
XXP	SAT	1,373	97.77%	99.65%	5,131	97.76%	99.62%

Table 3: WMFC RSP180 by SATCOM RGS

CPDLC RCP240

2.3 This section covers the ACP measurement for CPDLC messages sent within WMFC FIR for the whole year of 2020, categorized by data link media type. The performance is measured against RCP240 performance criteria of 180 and 210 seconds for 95 and 99.9 percent criterion respectively. The ACP for messages sent via Satellite and VHF meet the 95 percent criterion but fall below the 99.9 percent criterion. However, ACP for message sent via HF did not meet the 95 and 99.9 percent criterion.

2.4 **Table 4** summarizes RCP240 for CPDLC messages sent within the WMFC FIR for the whole year of 2020. **Table 5** and **6** presents the ACP measurement by media type (Satellite, VHF, HF and the combined total of both) for whole year of 2020.

Colour Key	Message Counts	95% Benchmark		99.9% Benchmark		Message Counts	95% Benchmark		99.90% Benchmark	
		ACP %<=180sec	ACTP %<=120sec	ACP %<=210sec	ACTP %<=150sec		ACP %<=180sec	ACTP %<=120sec	ACP %<=210sec	ACTP %<=150sec
Meets Criteria										
99.0% - 99.90%										
Under Criteria										
By Media Type										
SATCOM	4,522	97.77%	98.30%	98.57%	99.01%	1,692	95.92%	96.69%	96.93%	98.15%
VHF	4,686	98.53%	98.85%	98.86%	99.23%	2,434	98.66%	98.17%	98.95%	99.07%
HF	53	97.29%	93.61%	98.44%	98.28%	28	90.10%	82.24%	91.46%	85.06%
ALL	9,261	98.14%	98.54%	98.71%	99.11%	4,154	97.47%	97.45%	98.04%	98.57%

Table 4: WMFC RCP240 by Media Type

By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designat	Type	(only RGS/GES with message counts >100 recorded)									
BTJ1	VHF	648	98.51%	99.13%	98.83%	99.35%	140	98.80%	98.23%	99.04%	99.75%
HDY	VHF	139	99.41%	100.00%	99.50%	100.00%	136	99.71%	99.41%	100.00%	99.54%
HKT	VHF	1276	98.37%	98.26%	98.56%	98.71%	553	98.76%	97.39%	99.01%	98.47%
IXZ1	VHF	470	100.00%	100.00%	100.00%	100.00%	251	99.13%	97.78%	99.75%	99.15%
KULA	VHF	152	99.62%	100.00%	99.69%	100.00%	70	99.09%	99.66%	99.54%	100.00%
PEN1	VHF	159	100.00%	100.00%	100.00%	100.00%	105	99.52%	98.82%	99.96%	99.06%
SIN7	VHF	187	100.00%	100.00%	100.00%	100.00%	105	100.00%	100.00%	100.00%	100.00%
SIN8	VHF	344	99.77%	100.00%	99.84%	100.00%	165	100.00%	99.96%	100.00%	100.00%
SIN9	VHF	166	98.46%	99.36%	98.69%	100.00%	86	100.00%	100.00%	100.00%	100.00%
SZB1	VHF	251	100.00%	100.00%	100.00%	100.00%	118	100.00%	99.63%	100.00%	100.00%
USM	VHF	194	98.58%	98.49%	99.22%	98.60%	55	91.88%	98.41%	93.99%	99.04%

Table 5: WMFC RCP240 by VDL HF RGS

By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designat	Type	(only RGS/GES with message counts >100 recorded)									
AOR1	SAT	720	98.93%	99.65%	99.45%	99.82%	314	98.57%	100.00%	99.24%	100.00%
APK1	SAT	2,663	97.41%	97.93%	98.36%	98.88%	1,185	95.02%	95.95%	96.12%	97.78%
APK2	SAT	298	96.56%	97.61%	97.84%	98.57%	45	93.07%	90.71%	95.89%	96.44%
XXA	SAT	613	99.48%	99.87%	99.74%	99.98%	75	100.00%	100.00%	100.00%	100.00%

Table 6: WMFC RCP240 by SATCOM RGS

2.5 **Table 7** presents ACP measurement by Aircraft Operator and Type of Aircraft as below. For second period of year 2020, there are lot of Operator did not operate due to pandemic Covid-19.

FIR	WMFC											
Criteria	RCP240											
PERIOD	January-June 2020					July-December 2020						
■ Meets Criteria ■ 99.0% - 99.90% ■ 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 %<=60sec		ACP %<=180sec	ACTP %<=120sec	ACP %<=210sec	ACTP %<=150sec	PORT %<=60sec
By Aircraft Operator / Type (only message counts >100 recorded)												
AFR/B77W	108	98.56%	98.71%	98.91%	98.98%	98.06%	87	98.96%	97.06%	99.58%	99.22%	97.32%
BAW/A388	141	100.00%	99.53%	100.00%	99.65%	97.52%						
BAW/B77W	198	98.54%	99.43%	98.95%	100.00%	92.50%	96	96.67%	96.25%	97.75%	100.00%	92.59%
BAW/B789	102	100.00%	100.00%	100.00%	100.00%	99.20%	7	100.00%	100.00%	100.00%	100.00%	100.00%
ETD/B77W	257	100.00%	100.00%	100.00%	100.00%	99.94%	6	100.00%	100.00%	100.00%	100.00%	90.43%
ETD/B789	241	99.72%	99.84%	99.84%	100.00%	98.81%	370	96.64%	98.11%	97.21%	99.26%	92.33%
FIN/A359	104	95.66%	98.24%	96.35%	98.67%	91.92%						
KLM/B77W	272	99.23%	99.87%	100.00%	100.00%	96.86%	248	97.41%	98.88%	97.87%	98.98%	93.26%
MAS/A359	255	99.48%	99.00%	99.67%	99.17%	96.39%	29	100.00%	99.65%	100.00%	100.00%	89.71%
MAS/A388	167	99.79%	99.90%	100.00%	100.00%	98.95%						
MAS/B738	407	96.91%	97.79%	97.47%	98.67%	92.87%	6	100.00%	72.22%	100.00%	100.00%	82.54%
OMA/A332	106	97.36%	97.54%	97.56%	97.82%	96.67%						
OMA/A333	135	100.00%	100.00%	100.00%	100.00%	100.00%						
QFA/A388	132	100.00%	99.65%	100.00%	99.83%	98.58%						
QTR/A359	277	96.64%	98.92%	98.09%	99.43%	93.94%	362	94.57%	95.91%	95.18%	97.22%	94.27%
QTR/A35K	497	97.18%	98.32%	98.20%	99.40%	94.77%	57	98.08%	99.22%	98.48%	99.65%	96.67%
QTR/B77W	694	95.04%	95.72%	96.60%	97.46%	93.23%	466	97.24%	96.76%	98.00%	98.51%	95.71%
QTR/B788	359	99.46%	99.66%	99.63%	99.89%	98.37%	110	96.35%	98.33%	97.80%	98.89%	96.79%
SIA/A333	223	99.30%	99.71%	99.61%	99.83%	96.93%						
SIA/A359	675	95.30%	95.02%	95.94%	97.11%	92.15%	437	97.07%	96.14%	97.28%	96.72%	93.59%
SIA/A388	414	95.95%	96.34%	97.73%	97.54%	91.79%						
SIA/B77W	398	99.67%	99.76%	99.86%	99.82%	98.58%						
SLK/B738	216	100.00%	100.00%	100.00%	100.00%	97.02%	2	100.00%	100.00%	100.00%	100.00%	100.00%

THY/A333	131	100.00%	100.00%	100.00%	100.00%	99.49%						
THY/B77W	211	98.86%	100.00%	99.35%	100.00%	94.92%	100	94.78%	94.78%	96.50%	98.11%	92.83%
THY/B789	112	100.00%	100.00%	100.00%	100.00%	98.56%	130	100.00%	100.00%	100.00%	100.00%	98.72%
UAE/A388	385	99.75%	99.60%	99.79%	99.70%	99.22%						
UAE/B77W	653	99.65%	99.73%	99.91%	99.91%	97.29%	546	100.00%	99.49%	100.00%	100.00%	94.69%
XAX/A333	107	98.16%	98.45%	98.39%	98.99%	92.87%	7	100.00%	100.00%	100.00%	100.00%	100.00%

Table 7: WMFC RCP240 by Aircraft Operator and Type of Aircraft

2.6 **Attachment A, B, C and D** to this IP contains WMFC 2018 performance reports. These reports include:-

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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ADS-C
MEDIA TYPE/RGS/GES

FIR	WMFC						
Criteria	RSP180						
Period	January-June 2020			July-December 2020			
Colour Key							
 Meet Criteria	Message	95%	99.90%	Message	95%	99.90%	
 99.0% - 99.90%	Counts	%<=90sec	%<=180sec	Counts	%<=90sec	%<=180sec	
 Under Criteria							
By Media Type							
SATCOM	71,241	98.01%	99.58%	24,376	98.36%	99.74%	
VHF	77,853	98.01%	99.58%	32,780	99.35%	99.81%	
HF	13	67.52%	100.00%	10	93.11%	100.00%	
ALL	149,107	98.67%	99.67%	57,166	98.93%	99.78%	
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES with message counts >100 recorded)					
AOR1	SAT	6210	99.57%	99.82%	2,954	99.84%	99.98%
APK1	SAT	43419	98.15%	99.69%	18,342	98.30%	99.81%
APK2	SAT	6801	97.27%	99.17%	807	93.93%	97.89%
BTJ1	VHF	8165	97.17%	98.98%	437	95.42%	99.16%
HDY	VHF	3268	99.06%	99.62%	2,507	99.16%	99.60%
HDYV	VHF	1008	99.34%	99.90%	302	100.00%	100.00%
HKT	VHF	20214	99.49%	99.89%	7,017	99.37%	99.90%
HKTV	VHF	299	98.36%	99.37%	218	99.57%	99.90%
IGW1	SAT	1577	92.07%	98.35%	454	96.70%	99.29%
IXZ1	VHF	11346	99.68%	99.95%	4,516	99.40%	99.84%
KBR1	VHF	1274	99.57%	99.73%	908	100.00%	100.00%
KBV	VHF	770	100.00%	100.00%	666	99.76%	100.00%
KNO1	VHF	1043	100.00%	100.00%	309	98.24%	99.47%
KUA	VHF	226	97.36%	97.67%	94	95.84%	96.83%
KUA1	VHF	416	99.70%	100.00%	277	98.75%	99.79%
KUL	VHF	474	99.03%	99.60%	517	98.89%	99.33%
KUL1	VHF	1617	99.82%	99.87%	498	99.95%	100.00%
KUL2	VHF	1147	99.59%	99.72%	683	99.90%	100.00%
KULA	VHF	2843	98.80%	99.63%	1,171	99.06%	99.92%
LGK1	SAT	455	99.68%	100.00%	183	100.00%	100.00%
NAW	VHF	64	100.00%	100.00%	110	99.18%	100.00%
PEN	VHF	158	99.09%	100.00%	123	95.60%	97.34%
PEN1	VHF	3230	99.97%	99.98%	2,210	99.81%	100.00%
SIN	VHF	3628	99.46%	99.82%	1,850	99.60%	99.89%
SIN1	VHF	404	100.00%	100.00%	359	100.00%	100.00%
SIN2	VHF	943	100.00%	100.00%	315	100.00%	100.00%
SIN7	VHF	1933	100.00%	100.00%	998	99.89%	100.00%
SIN8	VHF	3330	99.88%	100.00%	1,926	99.72%	99.96%
SIN9	VHF	1154	99.90%	100.00%	775	99.92%	100.00%

SINV	VHF	1,865	99.57%	100.00%	281	99.94%	100.00%
SZB	VHF	850	97.83%	98.51%	407	97.02%	98.54%
SZB1	VHF	3,988	99.42%	99.91%	2,242	99.46%	99.82%
TGG1	VHF	278	99.75%	100.00%	366	99.76%	100.00%
USM	VHF	1,478	99.42%	99.63%	601	99.41%	99.80%
USMV	VHF	194	100.00%	100.00%			
XSP	SAT	466	99.26%	99.64%	500	99.07%	99.82%
XXA	SAT	10,931	97.84%	99.39%	1,136	98.94%	99.49%
XXP	SAT	1,373	97.77%	99.65%	5,131	97.76%	99.62%

ADS-C
AIRCRAFT OPERATOR/TYPE




FIR	WMFC					
Criteria	RSP180					
PERIOD	January-June 2020			July-December 2020		
Colour Key	Message	95%	99.90%	Message	95%	99.90%
 Meet Criteria	Counts	%<=90sec	%<=180sec	Counts	%<=90sec	%<=180sec
 99.0% - 99.90%						
 Under Criteria						
By Aircraft Operator / Type (only message counts >100 recorded)						
ABD/B744				144	99.31%	100.00%
AFR/B77W	2,376	99.38%	100.00%	1,201	99.57%	99.95%
AIC/A20N	1,232	93.47%	96.33%	1	100.00%	100.00%
AIC/B77L				126	100.00%	100.00%
AIC/B788	1,357	99.22%	99.80%	264	98.55%	99.37%
AZG/B744	23	79.84%	100.00%	196	97.45%	100.00%
AZG/B748	75	100.00%	100.00%	435	99.49%	100.00%
BAW/A388	2,102	99.67%	99.87%			
BAW/B77W	2,968	98.69%	99.79%	933	99.69%	99.90%
BAW/B789	2,068	99.86%	99.92%	242	100.00%	100.00%
BOX/B77L	921	100.00%	100.00%			
CCA/A332	106	99.91%	100.00%			
CCA/A333	212	98.80%	100.00%	70	100.00%	100.00%
CLX/B744				149	99.14%	100.00%
CLX/B748	177	100.00%	100.00%	1,254	99.49%	100.00%
CPA/A359	335	100.00%	100.00%			
CPA/B77W	152	97.74%	100.00%			
DLH/A343				282	99.94%	100.00%
DLH/A359	1,606	98.44%	99.68%			
DLH/A388	1,888	98.16%	100.00%			
ETD/B77L	18	100.00%	100.00%	315	99.80%	100.00%
ETD/B77W	3,239	98.81%	99.84%	37	100.00%	100.00%
ETD/B789	4,022	100.00%	100.00%	4,427	99.05%	99.98%
ETD/B78X	41	100.00%	100.00%	674	99.68%	99.95%
ETH/B788	15	100.00%	100.00%	441	99.48%	100.00%
ETH/B789	71	99.00%	100.00%	201	99.72%	100.00%
FDX/B752				109	98.17%	100.00%
FDX/B763	216	97.07%	99.29%	251	96.44%	98.36%
FDX/B77L	405	96.32%	99.71%	941	96.92%	99.19%

FIT-Asia/11 – WP/08
Attachment B

FIN/A359	1,749	99.81%	100.00%	542	99.36%	100.00%
GGG/GLF6	114	97.63%	100.00%			
HDA/A333	321	100.00%	100.00%	6	100.00%	100.00%
JST/B788	153	97.91%	100.00%	898	99.81%	100.00%
KAL/A333				216	99.39%	100.00%
KAL/B744				167	100.00%	100.00%
KAL/B748	193	92.03%	97.30%	21	100.00%	100.00%
KAL/B77L	16	100.00%	100.00%	117	98.59%	99.13%
KLM/B77W	6,566	99.74%	99.96%	3,710	99.69%	99.97%
KLM/B789	124	97.31%	100.00%	1,671	99.73%	100.00%
LOT/B788	668	97.65%	100.00%	42	100.00%	100.00%
LOT/B789	319	97.20%	99.41%			
MAS/A332	788	99.69%	99.98%	1,182	99.95%	100.00%
MAS/A333	1,011	99.42%	100.00%	443	99.59%	100.00%
MAS/A359	2,484	96.83%	99.52%	199	98.29%	100.00%
MAS/A388	2,484	99.22%	99.89%			
MAS/B738	5,815	96.30%	99.26%	22	92.84%	100.00%
OMA/A332	1,898	99.74%	99.95%			
OMA/A333	1,952	99.95%	99.97%			
OMA/B789	1,066	99.78%	100.00%			
QFA/A333	182	100.00%	100.00%			
QFA/A388	1,673	99.70%	100.00%			
QFA/B789	940	99.82%	100.00%			
QTR/A359	3,428	98.57%	99.60%	5,128	99.19%	99.95%
QTR/A35K	7,497	98.94%	99.66%	859	99.69%	99.99%
QTR/B77L	115	99.53%	100.00%	1,033	98.79%	100.00%
QTR/B77W	8,032	96.19%	99.47%	5,816	98.06%	99.60%
QTR/B788	4,773	98.95%	99.83%	1,436	98.54%	99.90%
RBA/A339	864	99.98%	100.00%			
SDM/B77W	1,054	99.81%	99.87%	142	100.00%	100.00%
SIA/A333	3,101	99.56%	99.80%			
SIA/A359	8,976	99.60%	99.89%	5,372	99.66%	99.99%
SIA/A388	5,544	99.70%	99.76%			
SIA/B744	47	100.00%	100.00%	690	94.71%	97.83%
SIA/B772	369	95.39%	98.08%			
SIA/B77W	4,629	98.83%	99.87%			
SIA/B78X	431	99.01%	99.86%	759	99.19%	100.00%
SLK/A320	402	96.66%	98.64%			
SLK/B738	3,083	98.64%	99.67%	36	100.00%	100.00%
SVA/B77W	233	100.00%	100.00%	53	100.00%	100.00%
SVA/B787	182	100.00%	100.00%			
SVA/B788	511	100.00%	100.00%	26	100.00%	100.00%
SVA/B789	1,090	100.00%	100.00%	91	100.00%	100.00%
SVA/B78X	732	99.78%	100.00%	55	100.00%	100.00%

SWR/B77W	233	100.00%	100.00%	771	99.05%	99.45%
SWR/B787	182	100.00%	100.00%			
SWR/B788	511	100.00%	100.00%			
SWR/B789	1,090	100.00%	100.00%			
SWR/B78X	732	99.78%	100.00%			
TGW/A320	501	98.26%	99.37%			
TGW/B788	1,692	99.00%	99.58%			
TGW/B789	168	99.67%	100.00%			
THY/A333	3,151	97.46%	98.89%			
THY/B77L				454	95.62%	99.16%
THY/B77W	3,124	97.55%	99.33%	1,778	98.31%	99.66%
THY/B789	2,591	97.80%	100.00%	2,041	98.14%	100.00%
UAE/A388	9,317	99.48%	99.93%			
UAE/B77L	200	100.00%	100.00%	405	99.38%	100.00%
UAE/B77W	11,401	98.90%	99.73%	6,701	98.97%	99.63%
UPS/B763	81	99.14%	100.00%	183	96.60%	98.91%
UZB/B788	219	96.23%	99.62%			
VTI/A20N	410	99.64%	100.00%			
XAX/A333	1,208	96.80%	99.07%	33	100.00%	100.00%

CPDLC
MEDIA TYPE/RGS/GES

Colour Key		Message Counts	95% Benchmark		99.9% Benchmark		Message Counts	95% Benchmark		99.90% Benchmark	
	Meets Criteria		ACP	ACTP	ACP	ACTP		ACP	ACTP	ACP	ACTP
	99.0% - 99.90%		%<=180sec	%<=120sec	%<=210sec	%<=150sec		%<=180sec	%<=120sec	%<=210sec	%<=150sec
	Under Criteria										
By Media Type											
SATCOM		4,522	97.77%	98.30%	98.57%	99.01%	1,692	95.92%	96.69%	96.93%	98.15%
VHF		4,686	98.53%	98.85%	98.86%	99.23%	2,434	98.66%	98.17%	98.95%	99.07%
HF		53	97.29%	93.61%	98.44%	98.28%	28	90.10%	82.24%	91.46%	85.06%
ALL		9,261	98.14%	98.54%	98.71%	99.11%	4,154	97.47%	97.45%	98.04%	98.57%
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(only RGS/GES with message counts >100 recorded)									
AOR1	SAT	720	98.93%	99.65%	99.45%	99.82%	314	98.57%	100.00%	99.24%	100.00%
APK1	SAT	2,663	97.41%	97.93%	98.36%	98.88%	1,185	95.02%	95.95%	96.12%	97.78%
APK2	SAT	298	96.56%	97.61%	97.84%	98.57%	45	93.07%	90.71%	95.89%	96.44%
BTJ1	VHF	648	98.51%	99.13%	98.83%	99.35%	140	98.80%	98.23%	99.04%	99.75%
HDY	VHF	139	99.41%	100.00%	99.50%	100.00%	136	99.71%	99.41%	100.00%	99.54%
HKT	VHF	1276	98.37%	98.26%	98.56%	98.71%	553	98.76%	97.39%	99.01%	98.47%
IXZ1	VHF	470	100.00%	100.00%	100.00%	100.00%	251	99.13%	97.78%	99.75%	99.15%
KULA	VHF	152	99.62%	100.00%	99.69%	100.00%	70	99.09%	99.66%	99.54%	100.00%
PEN1	VHF	159	100.00%	100.00%	100.00%	100.00%	105	99.52%	98.82%	99.96%	99.06%
SIN7	VHF	187	100.00%	100.00%	100.00%	100.00%	105	100.00%	100.00%	100.00%	100.00%
SIN8	VHF	344	99.77%	100.00%	99.84%	100.00%	165	100.00%	99.96%	100.00%	100.00%
SIN9	VHF	166	98.46%	99.36%	98.69%	100.00%	86	100.00%	100.00%	100.00%	100.00%
SZB1	VHF	251	100.00%	100.00%	100.00%	100.00%	118	100.00%	99.63%	100.00%	100.00%
USM	VHF	194	98.58%	98.49%	99.22%	98.60%	55	91.88%	98.41%	93.99%	99.04%
XXA	SAT	613	99.48%	99.87%	99.74%	99.98%	75	100.00%	100.00%	100.00%	100.00%

CPDLC
AIRCRAFT OPERATOR/TYPE

FIR	WMFC											
Criteria	RCP240											
PERIOD	January-June 2020					July-December 2020						
■ Meets Criteria ■ 99.0% - 99.90% ■ 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	%<60sec		%<=180sec	%<=120sec	%<=210sec	%<=150sec	%60sec
By Aircraft Operator / Type (only message counts >100 recorded)												
AFR/B77W	108	98.56%	98.71%	98.91%	98.98%	98.06%	87	98.96%	97.06%	99.58%	99.22%	97.32%
BAW/A388	141	100.00%	99.53%	100.00%	99.65%	97.52%						
BAW/B77W	198	98.54%	99.43%	98.95%	100.00%	92.50%	96	96.67%	96.25%	97.75%	100.00%	92.59%
BAW/B789	102	100.00%	100.00%	100.00%	100.00%	99.20%	7	100.00%	100.00%	100.00%	100.00%	100.00%
ETD/B77W	257	100.00%	100.00%	100.00%	100.00%	99.94%	6	100.00%	100.00%	100.00%	100.00%	90.43%
ETD/B789	241	99.72%	99.84%	99.84%	100.00%	98.81%	370	96.64%	98.11%	97.21%	99.26%	92.33%
FIN/A359	104	95.66%	98.24%	96.35%	98.67%	91.92%						
KLM/B77W	272	99.23%	99.87%	100.00%	100.00%	96.86%	248	97.41%	98.88%	97.87%	98.98%	93.26%
MAS/A359	255	99.48%	99.00%	99.67%	99.17%	96.39%	29	100.00%	99.65%	100.00%	100.00%	89.71%
MAS/A388	167	99.79%	99.90%	100.00%	100.00%	98.95%						
MAS/B738	407	96.91%	97.79%	97.47%	98.67%	92.87%	6	100.00%	72.22%	100.00%	100.00%	82.54%
OMA/A332	106	97.36%	97.54%	97.56%	97.82%	96.67%						
OMA/A333	135	100.00%	100.00%	100.00%	100.00%	100.00%						
QFA/A388	132	100.00%	99.65%	100.00%	99.83%	98.58%						
QTR/A359	277	96.64%	98.92%	98.09%	99.43%	93.94%	362	94.57%	95.91%	95.18%	97.22%	94.27%
QTR/A35K	497	97.18%	98.32%	98.20%	99.40%	94.77%	57	98.08%	99.22%	98.48%	99.65%	96.67%
QTR/B77W	694	95.04%	95.72%	96.60%	97.46%	93.23%	466	97.24%	96.76%	98.00%	98.51%	95.71%
QTR/B788	359	99.46%	99.66%	99.63%	99.89%	98.37%	110	96.35%	98.33%	97.80%	98.89%	96.79%

SIA/A333	223	99.30%	99.71%	99.61%	99.83%	96.93%						
SIA/A359	675	95.30%	95.02%	95.94%	97.11%	92.15%	437	97.07%	96.14%	97.28%	96.72%	93.59%
SIA/A388	414	95.95%	96.34%	97.73%	97.54%	91.79%						
SIA/B77W	398	99.67%	99.76%	99.86%	99.82%	98.58%						
SLK/B738	216	100.00%	100.00%	100.00%	100.00%	97.02%	2	100.00%	100.00%	100.00%	100.00%	100.00%
THY/A333	131	100.00%	100.00%	100.00%	100.00%	99.49%						
THY/B77W	211	98.86%	100.00%	99.35%	100.00%	94.92%	100	94.78%	94.78%	96.50%	98.11%	92.83%
THY/B789	112	100.00%	100.00%	100.00%	100.00%	98.56%	130	100.00%	100.00%	100.00%	100.00%	98.72%
UAE/A388	385	99.75%	99.60%	99.79%	99.70%	99.22%						
UAE/B77W	653	99.65%	99.73%	99.91%	99.91%	97.29%	546	100.00%	99.49%	100.00%	100.00%	94.69%
XAX/A333	107	98.16%	98.45%	98.39%	98.99%	92.87%	7	100.00%	100.00%	100.00%	100.00%	100.00%