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

DATA LINK PERFORMANCE REPORT FOR CHINA

(Presented by China)

SUMMARY

This paper presents data link performance data for 2021 for the Urumqi FIR (ZWWW) and Lanzhou FIR (ZLLL) , and information on actions taken to identify and rectify the causes of performance issues

1. INTRODUCTION

1.1 **Tables 1 to 8** summarize Automatic Dependent Surveillance – Contract (ADS-C) and Controller-Pilot Data Link Communications (CPDLC) performance where the Required Surveillance Performance (RSP) and Required Communications Performance (RCP) criteria stipulated in ICAO Doc 4444 – Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM) were not met. Actions taken to address performance not meeting the criteria are discussed, together with the outcomes of such actions.

1.2 ADS-C and CPDLC operation is applied in the routes L888 (SANLI-XKC), Y1 and Y2, operated by Lanzhou Air Control Center (ACC) and Urumqi ACC. The data link performance in the routes were measured against the RCP 240 and RSP 180 specifications for PBCS operations.

1.3 This report provides observed performance of the operational data link systems for the above-mentioned data link routes, collected from Lanzhou and Urumqi FIR for the period from Jan. 2021 to Dec. 2021.

2. DISCUSSION

Lanzhou FIR ADS-C RSP180 Performance – Media Type, RGS and GES

2.1 **Table 1** summarizes overall ADS-C performance per media type, Remote Ground Station (RGS) and Ground Earth Station (GES) for downlinks sent within the Lanzhou FIR during 2021, where performance did not meet the RSP180 performance criteria.

FIR	ZLLL					
Criteria	RSP180					
Period	Jan-June 2021			July-December 2021		
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 Media Type						
SATCOM	73036	98.45	99.74	97875	98.34	99.6

VHF		69935	99.32	99.73	110933	99.33	99.72
HF		19	47.36	89.47	34	26.47	41.17
ALL		142990	98. 8	99. 7	208842	98.8	99.6
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(only RGS/GES with message counts >100 recorded)					
XXA	SAT	3338	97.33	99.82	6041	98.04	99.42
XXF	SAT	2000	98.7	99.7	3090	98.41	99.74
APK1	SAT	44447	99.04	99.86	59329	99.02	99.75
EUA1	SAT	8345	96.42	99.5	11032	95.85	99.3
IGW1	SAT	3389	96.63	98.67	4003	97.35	98.87
IG1	SAT	1123	92.96	99.37	1089	94.03	99.35
EUA2	SAT	204	97.54	100	1263	96.51	99.36
XXP	SAT	7170	99.31	99.74	10155	98.4	99.41
XXI	SAT	3020	98.5	99.83	1873	97.65	99.62
NNGV	VHF	234	99.57	100	449	99.77	99.77
NNG	VHF	449	93.09	97.77	704	97.44	99.43
NQZ1	VHF	384	99.21	100	612	99.67	99.67
MRV1	VHF				180	99.44	99.44
MHD1	VHF				126	97.61	99.2
MSQ1	VHF	259	100	100	199	97.48	97.98
SCO1	VHF	723	99.72	99.72	978	99.18	99.28
ROV1	VHF	257	98.05	98.83	281	98.93	99.28
PKX	VHF	326	99.69	99.69	323	99.69	100
KWLV	VHF	141	100	100	357	99.43	99.71
KWL	VHF	525	91.42	96.95	627	96.33	99.04
KXX1	VHF	1993	99.29	99.69	2748	99.3	99.63
KRY	VHF	138	100	100	625	98.4	99.68
ZYI	VHF	272	99.63	100	459	99.12	99.34
LGGV	VHF	131	98.47	100	189	99.47	99.47
LHW	VHF	2445	99.3	99.55	5867	99.53	99.84
LLVV	VHF	144	99.3	99.3	105	100	100
URC	VHF	744	98.79	99.32	691	98.69	99.56
TSE	VHF	124	100	100	121	95.86	96.69
XIY	VHF	128	96.09	97.65	150	98	98.66
YIN	VHF	331	99.39	99.39	684	99.7	99.85
XNN	VHF	444	99.32	99.77	491	99.38	99.59
VNO7	VHF	398	99.74	99.74	530	99.62	99.62
VNOV	VHF	544	99.63	99.63	800	99.62	99.75
VOG1	VHF	1088	99.44	99.81	1272	98.74	99.21
SZXV	VHF	126	92.06	99.2	241	92.11	99.58
SZX	VHF	288	97.91	100	501	99.6	99.6
ZHA	VHF				160	99.37	99.37
TLQ	VHF	124	100	100	136	99.26	99.26
TAS1	VHF	1040	100	100	1332	99.54	99.69

TBS1	VHF	140	100	100	216	99.53	99.53
TFU	VHF				4642	99.46	99.71
TCG	VHF	985	99.28	99.69	1089	99.17	99.9
DAT	VHF	232	99.56	99.56	257	100	100
DME1	VHF	103	98.05	100			
DME	VHF	687	99.27	99.56	615	99.18	99.67
CGO	VHF				119	98.31	99.15
CGNV	VHF	121	100	100	231	99.13	99.13
CKG	VHF	643	99.06	99.84	744	99.32	100
DXB	VHF	182	99.45	99.45			
DZN1	VHF	1405	99.28	99.78	1562	99.03	99.35
DME2	VHF				121	99.17	99.17
DNH	VHF	683	99.56	99.7	1038	99.32	99.71
APK2	VHF	4370	98.46	99.72	7737	97.99	99.53
ASF1	VHF	702	99	99.43	800	99.12	99.75
ABA1	VHF				176	99.43	99.43
ALA	VHF	237	93.67	94.51	430	92.79	93.48
BXH1	VHF	1088	99.35	99.35	1369	98.97	99.34
CAN	VHF	959	99.37	99.68	1240	99.19	99.59
BAV	VHF	374	99.46	99.73	443	99.77	100
JGN	VHF	1915	99.37	99.58	2779	99.42	99.71
INC	VHF	530	99.43	99.43	634	98.89	99.52
ICN	VHF	323	99.69	99.69	323	100	100
ICN1	VHF	105	99.04	99.04			
ICN2	VHF	314	99.68	99.68	383	99.47	99.47
KJH	VHF	420	99.28	99.76	636	99.84	100
JZH	VHF	118	99.15	99.15			
KBP	VHF	189	100	100	118	99.15	99.15
KCA	VHF	436	99.77	99.77	884	99.66	99.88
KBPV	VHF	400	100	100	609	99.17	99.5
GUW1	VHF	1296	99.84	99.84	1498	98.66	99.13
GYS	VHF	373	99.19	100	147	99.31	99.31
HAN7	VHF	232	99.13	99.13			
GOQ	VHF	1854	99.56	99.78	3037	99.57	99.7
EUA2	VHF	243	96.7	99.58			
HMI	VHF	2193	99.22	99.54	2512	99.52	99.84
HKG	VHF	450	99.77	99.77	650	99.69	100
HKG2	VHF	308	96.75	98.7	143	98.6	100
HKG1	VHF	168	97.61	98.8	360	98.88	99.44

Table 1: Lanzhou FIR ADS-C Downlink Latency per Media Type, RGS and GES

Lanzhou FIR ADS-C RSP180 Performance – Aircraft Operator/Type

2.2 **Table 2** summarizes overall ADS-C performance per Aircraft Operator/Type for downlinks sent within the Lanzhou FIR during 2021, where performance did not meet the RSP180 performance criteria.

FIR	ZLLL					
Criteria	RSP180					
Period	Jan-June 2021			July-December 2021		
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 Aircraft Operator / Type (only message counts >100 recorded)						
ABW/B748	314	99.36	100	850	99.64	99.88
AZG/B744	531	96.23	98.68	1020	95.29	97.45
CES/A319	1265	97.54	99.84	1017	95.96	99.8
CKS/B744	466	98.49	99.78	135	98.51	100
CLX/B744	1684	97.32	99.1	1496	98.06	98.86
CLX/B748	10923	99.46	99.96	16011	99.3	99.81
CPA/B744	511	99.6	99.8	3478	99.42	99.94
CPA/B748	1127	98.93	99.82	2315	99.26	99.91
CPA/B77W	536	96.82	99.44	1099	98.36	99.45
ETD/B773	908	99.55	99.77	1558	99.29	99.74
ETD/B789	2615	99.19	99.88	2530	99.05	99.72
ETH/A359	273	100	100	307	99.67	99.67
ETH/B777	1690	97.98	99.64	2609	98.31	99.46
ETH/B788	624	99.03	99.83	302	99.66	99.66
FDX/B77L	18873	97.42	99.2	23932	96.95	98.91
GTI/B744	1753	98.74	99.77	1028	98.73	99.61
GTI/B748	918	99.12	99.56	1460	99.1	99.79
ICV/B744	1430	98.88	99.44	1355	98.81	99.26
KAL/A333	337	98.81	99.4	508	99.8	100
LOT/B788	570	99.47	100	880	99.09	99.77
NCR/B744	660	96.21	99.54	315	98.73	100
PAC/B744	756	99.2	100	1072	98.32	99.62
PIA/B772	183	97.81	98.9	542	98.7	99.26
QTR/B77L	977	99.28	99.59	2922	98.83	99.76
QTR/B77W	6116	98.9	99.64	8879	98.11	99.56
RUN/B744	3100	98.54	98.96	8270	98.42	98.75
SOO/B77L	2317	96.89	99.43	3508	97.8	99.4
UAE/B772	712	98.45	99.29	701	96.86	98.85
UPS/B744	11262	98.75	99.76	11254	98.99	99.83
UZB/B763	1357	98.74	99.92	1515	98.48	99.8
VIR/B789	2681	99.06	99.66	2868	99.58	100
WGN/MD11	227	99.11	100	294	98.97	99.65
DLH/A343				425	96.47	99.76
THY/A333				391	99.74	99.74
AAR/A333				243	96.29	97.94
HVN/B789				804	98.5	99.5
QTR/A332				920	99.23	99.34

EVA/B77W				1848	98.59	99.4
ETD/B772				333	99.09	99.69
MSR/B773				183	99.45	99.45
IFA/CL60				104	96.15	97.11
IGA/B744				110	97.27	97.27
AFR/B77W				599	97.82	99.66
MMZ/B763				466	99.57	99.57
ABW/B744				186	99.46	99.46
KAL/B77L				1755	98.86	99.77
QTR/A359				1278	99.21	99.53

Table 2: Lanzhou FIR ADS-C Downlink Latency per Aircraft Operator/Type

Lanzhou FIR CPDLC RCP240 Performance – Media Type, RGS and GES

2.3 **Tables 3A and 3B** summarize overall CPDLC performance per Media Type, RGS and GES for messages sent within the Lanzhou FIR during 2021, where performance did not meet the RCP240 performance criteria.

FIR		**ZLLL**				
Criteria		**RCP240**				
Period		**Jan - Jun 2021**				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	**Message Counts**	95% benchmark		99.9% Benchmark		**95.00%**
		ACP	**ACTP**	**ACP**	**ACTP**	**PORT**
		% < = 180sec	**% <= 120sec**	**% < = 210sec**	**% <= 150sec**	**% <= 60sec**
By Media Type						
SAT	1378	98.47	99.56	98.54	99.63	97.89
VHF	167	97	98.2	97	98.2	95.8
SV	23	91.3	95.65	91.3	95.65	95.65
VS	7	85.71	71.42	85.71	85.71	85.71
HS	4	75	50	75	50	75
HV	2	50	50	50	50	50
SH	1	0	0	0	0	100
ALL	1582	97.97	98.98	98.04	99.11	97.47
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	**Type**	(RGS/GES with message counts >100)				
APK1	SAT	981	98.26	99.49	98.36	99.49	98.16
XXP	SAT	287	99.3	99.65	99.3	100	97.9
LHW	VHF	107	99.06	99.06	99.06	99.06	97.19

Table 3A: Lanzhou FIR CPDLC Performance Latency per Media Type, RGS and GES – Jan-Jun 2021.

FIR	ZLLL					
Criteria	RCP240					
Period	Jul - Dec 2021					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95.00%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	% <= 60sec
By Media Type						
SATCOM	1374	98.76	99.41	98.9	99.49	98.32
SV	196	98.46	100	98.46	100	97.44
VHF	166	97.59	97.59	97.59	97.59	97.59
VS	8	87.5	100	87.5	100	87.5
HS	8	25	25	37.5	37.5	25
HV	6	50	33.33	66.66	33.33	66.66
SH	1	100	0	100	0	100
ALL	1759	98.06	98.69	98.29	98.8	97.66
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	**Type**	(RGS/GES with message counts >100)				
APK1	SAT	997	98.79	99.29	98.89	99.39	98.79
XXP	SAT	200	99.5	99.5	99.5	99.5	98
XXA	SV	147	98.63	100	98.63	100	97.95

Table 3B: Lanzhou FIR CPDLC Performance Latency per Media Type, RGS and GES – Jul-Dec 2021.

Lanzhou FIR CPDLC RCP240 Performance – Aircraft Operator/Type

2.4 **Tables 4A and 4B** summarize overall CPDLC performance per Aircraft Operator/Type for messages sent within the Lanzhou FIR during 2021, where performance did not meet the RCP240 performance criteria.

FIR	ZLLL					
Criteria	RCP240					
Period	Jan - Jun 2021					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	%< 60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
THY/A332	107	98.13	100	98.13	100	98.13
CLX/B748	139	99.28	100	99.28	100	99.28
/	716	97.2	98.6	97.34	98.74	97.06

Table 4A: Lanzhou FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2021

FIR	ZLLL					
Criteria	RCP240					
Period	Jul - Dec 2021					
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	%< 60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
THY/A332	121	99.17	99.17	99.17	99.17	97.52
CLX/B748	188	98.93	98.93	98.93	98.93	100
AZG/B748	175	99.42	100	99.42	100	99.42
/	801	97.5	98.12	97.75	98.25	97.25

Table 4B: Lanzhou FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2021

Urumqi FIR ADS-C RSP180 Performance – Media Type, RGS and GES

2.5 **Table 5** summarizes overall ADS-C performance per media type, Remote Ground Station (RGS) and Ground Earth Station (GES) for downlinks sent within the Urumqi FIR during 2021, where performance did not meet the RSP180 performance criteria.

FIR		ZWWW					
Criteria		RSP180					
Period		Jan-June 2021			July-December 2021		
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 Media Type							
SATCOM		37457	98.44	99.73	51743	98.43	99.63
VHF		37566	99.42	99.76	49911	99.31	99.69
HF		11	27.27	81.81	6	33.33	50
ALL		75034	98. 9	99. 7	101660	98. 8	99. 6
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(only RGS/GES with message counts >100 recorded)					
EUA1	SAT	5812	97.38	99.69	7528	97.23	99.48
XXA	SAT	2562	97.03	99.8	3955	97.62	99.51
XXF	SAT	1432	98.88	99.86	2083	98.07	99.61
IGW1	SAT	1474	95.99	98.77	1782	96.18	98.93
IG1	SAT	823	95.26	98.9	875	94.85	99.2
EUA2	SAT	204	97.05	100	709	97.32	99.43
XXP	SAT	2193	98.76	99.63	4797	98.35	99.27
APK1	SAT	21408	99.16	99.83	28778	99.19	99.82
XXI	SAT	1549	98.12	99.67	1236	97.73	99.59
MSQ1	VHF	129	99.22	99.22			
NNG	VHF	211	96.2	98.1	356	98.31	100
SCO1	VHF	287	99.65	99.65	395	99.49	100

PKX	VHF	297	99.32	99.66	335	100	100
LHW	VHF	1058	99.71	99.81	1468	99.31	99.72
KRY	VHF	175	98.85	100	736	98.91	99.72
KRL	VHF	866	99.65	99.88	1025	99.31	99.7
KRLV	VHF				124	97.58	97.58
YNT	VHF	141	99.29	100	113	97.34	99.11
KXX1	VHF	904	99.44	99.88	1190	99.15	99.66
KZO	VHF				145	98.62	98.62
KWL	VHF	240	93.33	98.33	344	97.96	99.12
KWLV	VHF				120	99.16	99.16
ZYI	VHF	118	99.15	100	180	99.44	99.44
VOG1	VHF	519	99.8	99.8	547	98.53	98.9
VNO	VHF	151	100	100	142	99.29	99.29
VNO7	VHF	199	100	100	255	99.6	99.6
VNOV	VHF	264	100	100	327	99.69	99.69
TAO	VHF	113	100	100	213	99.53	99.53
TAS1	VHF	511	100	100	586	99.65	99.65
TFUV	VHF				544	99.63	99.81
TLQ	VHF	186	99.46	99.46	174	100	100
TCG	VHF	824	98.9	99.39	1019	99.31	99.9
TFU	VHF				996	99.69	99.79
KJH	VHF	199	98.99	99.49	273	99.63	100
CTU	VHF	663	99.54	99.69	284	98.94	99.29
CAN	VHF	458	98.9	100	571	98.24	99.12
DXB	VHF	157	99.36	99.36			
DZN1	VHF	608	99.01	99.34	687	98.83	99.56
DAT	VHF	353	99.71	99.71	386	99.22	99.74
DME	VHF	260	98.46	99.23	290	98.62	99.65
DNH	VHF	419	99.28	99.76	702	99.57	99.85
APK2	VHF	1491	98.12	99.46	2640	98.25	99.5
ASB1	VHF	667	100	100	865	99.42	99.53
AKU	VHF	208	99.51	99.51	114	100	100
AKX	VHF	133	99.24	100			
ALA	VHF	198	95.45	96.46	282	95.74	97.87
ASF1	VHF	310	99.03	99.35	354	98.58	99.43
BXH1	VHF	579	99.3	99.65	688	99.41	99.7
AVK	VHF	117	100	100	218	99.54	99.54
ICN2	VHF	334	98.8	99.1	406	99.01	99.01
INC	VHF	310	100	100	293	99.31	99.31
ICN	VHF	460	99.78	99.78	476	100	100
KCA	VHF	721	99.3	99.58	1303	99.3	99.69
GUW1	VHF	626	99.36	100	636	98.74	99.05
GYD1	VHF	1010	99.4	99.6	1223	99.42	99.67
EUA2	VHF	163	98.15	99.38			

GOQ	VHF	573	99.65	99.65	944	99.15	99.15
HKG8	VHF	223	100	100	654	99.84	99.84
HMI	VHF	1817	99.33	99.77	2138	99.57	99.9
HKG	VHF	258	99.61	99.61	363	99.72	99.72
HKG1	VHF				197	99.49	99.49
HKG7	VHF	478	99.79	99.79	511	100	100

Table 5: Urumqi FIR ADS-C Downlink Latency per Media Type, RGS and GES

Urumqi FIR ADS-C RSP180 Performance – Aircraft Operator/Type

2.6 **Table 6** summarizes overall ADS-C performance per Aircraft Operator/Type for downlinks sent within the Urumqi FIR during 2021, where performance did not meet the RSP180 performance criteria.

FIR	**ZWWW**					
Criteria	**RSP180**					
Period	**Jan-June 2021**			**July-December 2021**		
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 Aircraft Operator / Type (only message counts >100 recorded)						
AZG/B744	407	96.56	98.52	696	93.53	97.12
AZG/B748	6182	99.25	99.88	7205	99.05	99.8
BAW/B77W	271	99.26	99.63	370	99.18	100
CKS/B744	553	99.09	99.45	161	98.75	100
CLX/B744	706	98.44	99.15	658	99.08	99.69
CLX/B748	4045	98.96	99.87	5588	98.97	99.82
CPA/B744	273	99.26	99.63	1572	99.23	99.93
CPA/B748	384	98.69	99.73	1191	98.9	99.41
CPA/B77W	265	96.98	98.49	608	97.36	99.5
ETD/B773	557	99.64	99.82	917	99.67	99.89
ETD/B789	1722	99.12	99.65	1630	99.2	99.69
ETH/B772	500	99.2	100	1066	98.78	99.81
ETH/B777	1696	98.4	99.88	2082	98.36	99.66
ETH/B788	932	99.03	99.78	697	99.42	99.85
FDX/B77L	8384	97.66	99.2	9849	97.23	98.97
GEC/B77L	215	97.2	100	181	97.23	98.34
GTI/B744	1125	98.57	99.73	840	99.04	99.88
ICL/B744	1335	99.7	99.92	2082	99.51	99.8
ICV/B744	500	98.6	99.2	413	98.3	99.27
IGA/A320	1351	99.62	100	2254	99.37	99.82
KAL/A333	302	99.66	100	279	98.56	99.64
NCR/B744	343	97.08	99.12	151	100	100
PAC/B744	823	99.27	99.87	637	98.74	99.84
QTR/B77L	585	99.31	99.82	1945	99.22	99.89

QTR/B77W	4865	98.43	99.71	6251	98.25	99.52
RUN/B744	1273	98.19	98.9	4250	98.35	98.82
SOO/B77L	1189	98.23	99.41	1764	97.27	99.43
UAE/B772	613	98.53	99.83	768	98.56	99.34
UZB/B763	1707	99.7	100	2418	98.96	99.83
VIR/B789	1367	98.75	99.78	1928	99.53	100
VJT/GLEX	277	99.27	99.63	414	97.58	99.51
WGN/MD11	185	98.91	99.45	328	98.17	99.39
EVA/B77W				1744	99.19	99.82
CPA/A359				1235	99.75	99.83
KAL/B77L				1233	99.02	99.83
WGN/B744				117	97.43	99.14
AFR/B77W				189	97.35	98.94
IFA/CL60				121	94.21	97.52
PIA/B772				276	99.63	99.63

Table 6: Urumqi FIR ADS-C Downlink Latency per Aircraft Operator/Type

Urumqi FIR CPDLC RCP240 Performance – Media Type, RGS and GES

2.7 **Tables 7A and 7B** summarize overall CPDLC performance per Media Type, RGS and GES for messages sent within the Urumqi FIR during 2021, where performance did not meet the RCP240 performance criteria.

FIR		**ZWWW**				
Criteria		**RCP240**				
Period		Jan - Jun 2021				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	**Message Counts**	**95% benchmark**		**99.9% Benchmark**		**95.00%**
		ACP	**ACTP**	**ACP**	**ACTP**	**PORT**
		% < = 180sec	**% <= 120sec**	**% < = 210sec**	**% <= 150sec**	**% <= 60sec**
By Media Type						
SAT	136	97.79	98.52	98.52	98.52	97.79
VHF	4	100	100	100	100	100
SV	3	100	100	100	100	100
HS	3	100	100	100	100	33.33
VS	1	0	100	0	100	0
ALL	147	97.27	98.63	97.95	98.63	95.91
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	**Type**	(RGS/GES with message counts >100)				
Data counts for all individual station are below 100.						

Table 7A: Urumqi FIR CPDLC Performance Latency per Media Type, RGS and GES – Jan-Jun 2021.

FIR	ZWWW					
Criteria	RCP240					
Period	Jul - Dec 2021					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95.00%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	% <= 60sec
By Media Type						
SAT	74	100	100	100	100	100
SV	1	100	100	100	100	100
VHF	4	100	100	100	100	100
VS	1	100	100	100	100	100
ALL	80	100	100	100	100	100
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	**Type**	(RGS/GES with message counts >100)				
Data counts for all individual station are below 100.						

Table 7B: Urumqi FIR CPDLC Performance Latency per Media Type, RGS and GES – Jul-Dec 2021.

Urumqi FIR CPDLC RCP240 Performance – Aircraft Operator/Type

2.8 **Tables 8A and 8B** summarize overall CPDLC performance per Aircraft Operator/Type for messages sent within the Urumqi FIR during 2021, where performance did not meet the RCP240 performance criteria.

FIR	ZWWW				
Criteria	RCP240				
Period	Jan - Jun 2021				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	95%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	%<60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
Data counts for all individual operator are below 100.						

Table 8A: Urumqi FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2021

FIR	ZWWW				
Criteria	RCP240				
Period	Jan - Jun 2021				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	95%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	%<60secs
By Aircraft Operator / Type (only message counts >100 recorded)						
Data counts for all individual operator are below 100.						

Table 8B: Urumqi FIR CPDLC Performance Latency per Aircraft Operator/Type – Jan-Jun 2021

2.9 The traffic flow on L888, Y1 and Y2 has decreased, resulting in the lower amount of the CPDLC and ADS-C message in 2021. In L888, the CPDLC and ADS-C are used as primary

communication and surveillance means in its Lanzhou part, but in Urumqi part they are used as alternate means. The CPDLC and ADC-C are used as alternative communication system in Y1 and Y2, and VHF voice communication is used as primary communication means in Lanzhou ACC and Urumqi ACC. In these years, ADS-B surveillance system has covered most of these routes, making the ADS-C surveillance more a source of reference on L888, Y1 and Y2.

2.10 According to the analysis above, most of the 95% requirements for RSP180 and RCP240 specifications were met, some results for the 99.9% performance requirements were not achieved for some RGS/GES or operators. The HF performance was lower than the required level, but the number of HF message continues to decrease.

2.11 The results will be reported to the CAAC (Civil Aviation Administration of China) to take corrective actions as appropriate, a detailed investigation will start. China has established data link communication performance monitoring mechanism, and PBCS problem reporting mechanism to further investigate the non-compliance cases. CAAC will publish PBCS performance monitoring regulations to clarify relevant operational specifications and will complete the on-going actions to further strength the PBCS monitoring mechanism.

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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