



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 HO CHI MINH FIR

(Presented by Vietnam)

SUMMARY

This paper presents the data link performance for Ho Chi Minh FIR for 2019

1. INTRODUCTION

1.1 This paper presents the data link performance for HCM FIR from January to December 2019.




1.2 This performance report is based on the Performance-based Communications and Surveillance (PBCS) Performance monitoring analysis reporting format instead of the previous Global Operational Data Link Document (GOLD) reporting format used in the previous annual report.

1.3 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 a number of Iridium outages throughout the year.

2. DISCUSSION




ADS-C Analysis by Media Type and RGS

2.1 For ADS-C differentiated by RGS/GES, 01 station (XXP) had failed to meet 95% and 99.9% criteria. Vietnam have followed up with the CSP to continue monitoring the performance of these stations.

FIR		HCM					
Criteria		RSP 180					
Period		Jan - Jun 2019			Jul - Dec 2019		
Colour key			95%	99.9%		95%	99.9%
	Meets criteria	Message Counts	%<= 90s	%<= 180s	Message Counts	%<= 90s	%<= 180s
	99.0 % - 99.84%						
	Under Criteria						
Designator	Type	(only RGS/GES With message counts >100 recorded)					
XXP	VHF	8774	94.36%	98.99%	7702	92.73%	98.95%




ADS-C analysis by aircraft operator and type

2.2 As for the ADS-C differentiated by aircraft operator/type, there is one operator (THA) which failed the 95% and 99.9% criteria. Vietnam have followed up with the operators and also filed problem reports with the CRA

FIR	HCM					
Criteria	RSP 180					
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%
		%<= 90s	%<= 180s		%<= 90s	%<= 180s
By Aircraft Operator/Type (only message counts > 100 recorded)						
THA	452	93.58%	98.87%	638	96.87%	98.86%

CPDLC performance by media type/RGS/GES

2.3 For CPDLC differentiated by RGS/GES, 02 stations (XXP, N/A) had failed to meet 95% and 99.9% criteria. Vietnam have followed up with the CSP to continue monitoring the performance of these stations.

FIR	HCM										
Criteria	RCP 240										
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	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s		ACP %<= 180s	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s	
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES With message counts >100)									
N/A	VHF	480	56.56%	90.83%	64.17%	94.11%	60	97.28%	100.00%	97.52%	100.00%
XXP	VHF	1039	93.86%	97.64%	95.25%	98.63%	861	92.92%	97.19%	94.48%	97.75%

CPDLC performance by operator/type

2.4 As for the CPDLC differentiated by aircraft operator/type, there are 5 pairs of operator/type which failed the 95% and 99.9% criteria. Vietnam have followed up with the operators.

FIR		HCM										
Criteria		RCP 240										
Period		Jan - Jun 2019					Jul - Dec 2019					
Colour key Meets criteria 99.0 % - 99.84% Under Criteria	Message Counts	95%		99.9%		95.0%	Message Counts	95%		99.9%		95.0%
		ACP %<= 180s	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s	PORT %<= 60s		ACP %<= 180s	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s	PORT %<= 60s
By Aircraft Operator/Type												
AAR	432	94.52%	98.47%	95.87%	98.65%	90.15%	219	96.60%	99.44%	97.89%	99.64%	93.15%
CPA	1492	93.46%	98.90%	94.10%	99.23%	90.01%	1940	93.55%	98.14%	94.37%	98.44%	89.54%
JST	148	91.28%	98.13%	91.60%	98.27%	88.44%	187	90.24%	100.00%	91.20%	100.00%	87.65%
SLK	251	92.40%	99.71%	93.63%	99.86%	86.16%	96	92.64%	95.83%	94.69%	96.61%	84.52%
SQC	185	93.97%	100.00%	95.62%	100.00%	89.19%	265	91.93%	98.11%	92.45%	98.91%	89.34%

2.5 **Attachment A, B, C and D** contain HCM FIR 2019 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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ATTACHMENT A – ADS-C ANALYSIS BY MEDIA TYPE AND RGS.

Table 1 presents ADS-C Downlink Latency for messages sent within HCM FIR by different media type and GES for the period Jan.2019 to Dec. 2019.

FIR		HCM					
Criteria		RSP 180					
Period		Jan - Jun 2019			Jul - Dec 2019		
Colour key		Message Counts	95%	99.9%	Message Counts	95%	99.9%
	Meets criteria		%<= 90s	%<= 180s		%<= 90s	%<= 180s
	99.0 % - 99.84%						
	Under Criteria						
By Media Type							
SATCOM		75232	97.43%	99.46%	74409	96.88%	99.40%
VHF		169499	98.73%	99.65%	181048	98.76%	99.69%
ALL		244731	98.33%	99.59%	255457	98.22%	99.61%
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	Type	(only RGS/GES With message counts >100 recorded)					
APK1	SAT	56847	97.64%	99.48%	57057	97.13%	99.42%
APK2	VHF	38836	97.96%	99.36%	32519	97.86%	99.53%
BKI	VHF	793	97.73%	99.14%	253	98.55%	99.90%
BKK	VHF	281	98.70%	99.10%	428	98.76%	99.42%
BMV1	VHF	3989	99.82%	99.96%	7072	99.83%	99.91%
CAN	VHF	124	98.39%	100.00%	119	99.20%	100.00%
CXR	VHF	15796	99.76%	99.95%	15120	99.62%	99.91%
CXR1	VHF				5603	99.74%	99.95%
CXRV	VHF	729	100.00%	100.00%	1863	99.90%	100.00%
DAD	VHF	2105	99.37%	99.96%	1579	99.62%	99.94%
DAD1	VHF	1077	99.03%	99.69%	711	99.61%	99.82%
DLI1	VHF	663	99.46%	100.00%	9328	99.34%	99.80%
DMK	VHF	147	100.00%	100.00%	179	98.82%	99.89%




HAK	VHF	1763	99.83%	99.92%	1738	99.64%	100.00%
HAN	VHF	103	100.00%	100.00%	100	99.42%	100.00%
HAN1	VHF	183	99.52%	100.00%	100	100.00%	100.00%
HAN7	VHF	116	100.00%	100.00%	127	100.00%	100.00%
HDY	VHF	687	97.82%	100.00%	590	99.46%	100.00%
HPH1	VHF	119	100.00%	100.00%	119	98.71%	99.52%
HUI1	VHF				101	100.00%	100.00%
IG1	SAT	434	96.31%	99.59%	581	90.53%	98.87%
IGW1	VHF	5584	95.97%	98.97%	5094	96.05%	98.86%
IOR2	SAT	2213	98.64%	99.71%	643	98.29%	99.78%
KBR	VHF	423	99.19%	99.83%	368	98.64%	99.78%
KBR1	VHF	1266	99.53%	99.87%	4090	99.74%	99.89%
KKC	VHF	114	100.00%	100.00%	152	100.00%	100.00%
KUA	VHF	522	99.63%	99.90%	610	99.68%	99.97%
KUA1	VHF	609	99.76%	99.86%	2101	99.36%	99.74%
KUL	VHF	117	99.56%	100.00%	126	98.27%	100.00%
LAO	VHF	940	99.61%	99.72%	702	99.57%	99.78%
MFM	VHF	190	99.52%	100.00%	189	99.47%	99.91%
MTS1	SAT	449	97.66%	99.16%	508	98.43%	99.29%
MYY	VHF	324	99.14%	100.00%	261	97.93%	100.00%
NAW	VHF	1069	98.54%	99.70%	1307	99.23%	99.73%
NTX	VHF	124	100.00%	100.00%			
PNH	VHF	553	99.31%	99.75%	623	97.89%	99.48%
PNH1	VHF	563	99.84%	99.93%	299	99.21%	100.00%
POR1	SAT	259	98.71%	100.00%	53	97.08%	100.00%
PPS	VHF	189	96.71%	99.07%	206	96.22%	99.20%
PQC	VHF	977	99.45%	100.00%	879	99.77%	99.85%
REP1	VHF	1141	99.94%	100.00%	861	99.82%	99.91%
SGN	VHF	8340	99.63%	99.89%	6812	99.36%	99.64%
SGN1	VHF	4737	99.20%	99.70%	4016	99.17%	99.55%
SGN7	VHF	4357	99.80%	99.97%	6300	99.79%	99.94%

SGNV	VHF	150	100.00%	100.00%	486	99.88%	100.00%
SIN	VHF	2821	99.26%	99.90%	2302	99.04%	99.79%
SIN8	VHF	317	100.00%	100.00%	314	99.43%	100.00%
SIN9	VHF	198	98.87%	99.21%	194	97.57%	99.59%
SYX	VHF	21339	99.25%	99.77%	22144	99.13%	99.80%
SYXV	VHF	224	100.00%	100.00%	855	99.95%	100.00%
SZX	VHF	221	99.16%	100.00%	216	99.71%	100.00%
TGG	VHF	10163	99.74%	99.92%	5646	99.62%	99.91%
TGG1	VHF	347	100.00%	100.00%	1050	100.00%	100.00%
UBP	VHF	1026	98.48%	99.69%	1049	99.38%	100.00%
UIH	VHF	3407	99.58%	99.83%	4270	99.74%	99.98%
UIH1	VHF	1804	99.53%	99.73%	2208	99.55%	99.82%
USM	VHF	1071	98.83%	99.68%	725	99.51%	99.95%
VCS	VHF	15233	99.70%	99.95%	14541	99.67%	99.90%
VCSV	VHF	615	99.83%	100.00%	1468	99.92%	99.96%
VII1	VHF	257	99.32%	99.79%	306	99.17%	99.91%
XSP	VHF	418	99.14%	99.85%	603	98.94%	99.63%
XXA	SAT	14306	96.38%	99.34%	15375	96.09%	99.35%
XXI	SAT	724	98.38%	99.95%	192	98.26%	100.00%
XXP	VHF	8774	94.36%	98.99%	7702	92.73%	98.95%

Table 1: ADS-C Performance by media Type

ATTACHMENT B – ADS-C ANALYSIS BY AIRCRAFT OPERATOR AND TYPE

Table 2 presents ADS-C Downlink Latency for messages sent within HCM FIR by different media type and GES for 2019.




FIR	HCM					
Criteria	RSP 180					
Period	Jan - Jun 2019			Jul - Dec 2019		
Colour key	Message Counts	95%	99.9%	Message Counts	95%	99.9%
 Meets criteria		%<= 90s	%<= 180s		%<= 90s	%<= 180s
 99.0 % - 99.84%						
 Under Criteria						
By Aircraft Operator/Type (only message counts > 100 recorded)						
AAR	4306	98.86%	99.83%	2989	97.39%	99.79%
ABW	310	99.29%	100.00%	306	99.00%	99.70%
ACA	208	100.00%	100.00%	79	100.00%	100.00%
ANA	8169	97.82%	99.65%	7173	98.45%	99.59%
ANA844	372	99.32%	99.86%	406	99.56%	100.00%
AXM	2291	97.40%	99.54%	3134	98.17%	99.72%
CAL	12056	98.18%	99.41%	12432	97.94%	99.47%
CAL784	532	99.48%	99.94%	344	99.34%	100.00%
CCA	1433	99.05%	99.93%	1220	99.07%	100.00%
CES	2640	99.32%	99.85%	3243	99.35%	99.78%
CKK	254	99.82%	100.00%	455	100.00%	100.00%
CPA	9300	98.12%	99.64%	11989	97.90%	99.53%
CRK	1551	98.67%	99.76%	1616	97.97%	99.75%
DAL	841	97.03%	99.54%	369	96.48%	98.84%
ETD	2601	98.77%	99.69%	2313	99.01%	99.83%
EVA	7096	98.87%	99.66%	7116	98.64%	99.81%
FDX	3345	96.14%	98.57%	3341	96.80%	98.59%
GIA	641	99.78%	99.92%	226	99.62%	99.93%
GIA863	101	98.67%	100.00%	26	100.00%	100.00%

HDA	692	99.05%	100.00%	481	97.92%	99.48%
JAL	5766	98.53%	99.84%	5829	97.60%	99.32%
JST	790	99.40%	100.00%	941	98.57%	99.50%
KAL	13638	97.68%	99.46%	12491	95.98%	99.32%
KAL643	108	99.14%	99.61%	113	96.06%	99.28%
MAS	12481	99.01%	99.47%	12213	99.43%	99.79%
OMA	778	99.42%	99.96%	633	99.84%	99.89%
QFA	876	98.74%	99.39%	20	98.46%	100.00%
QFA				960	97.60%	98.32%
QTR	3399	98.41%	99.55%	2748	99.31%	99.73%
RBA	613	97.59%	99.68%	1052	96.29%	98.74%
SCO	9271	99.41%	99.74%	8778	99.43%	99.85%
SCO182	933	99.63%	99.92%	929	99.83%	100.00%
SIA	39979	97.85%	99.42%	32164	96.80%	99.44%
SIA856	262	99.14%	99.95%	142	100.00%	100.00%
SIA861	210	99.66%	100.00%	221	100.00%	100.00%
SLK	4371	99.13%	99.81%	4138	98.86%	99.53%
SLK608	226	100.00%	100.00%	300	100.00%	100.00%
SQC	4621	98.96%	99.82%	4957	98.57%	99.88%
TAX				111	97.60%	100.00%
THA	452	93.58%	98.87%	638	96.87%	98.86%
THY	1003	99.43%	99.92%	816	99.68%	99.90%
UAE	3219	95.15%	99.45%	3115	94.80%	99.19%
UAL803	121	98.12%	100.00%	245	99.26%	99.91%
UAL804	575	97.51%	100.00%	801	98.75%	99.67%
UPS	3154	97.75%	99.37%	3110	97.94%	99.68%
USA	767	96.74%	99.33%	798	96.87%	98.66%
VJT	363	96.07%	99.82%	230	96.45%	99.18%
XAX	4323	98.13%	99.63%	5669	99.19%	99.89%
XAX505	375	98.40%	99.80%	603	98.58%	99.44%

Table 2: ADS-C Performance by Operator/Type

ATTACHMENT C – CPDLC ANALYSIS BY MEDIA TYPE AND RGS.

Table 3 presents the CPDLC actual communications performance (APC) and CPDLC actual communication technical performance (ACTP) for messages sent within HCM FIR by different media type and GES for the period Jan.2019 to Dec. 2019.




FIR		HCM									
Criteria		RCP 240									
Period		Jan - Jun 2019					Jul - Dec 2019				
Colour key		95%		99.9%		95%		99.9%			
 Meets criteria	Message Counts	ACP	ACTP	ACP	ACTP	ACP	ACTP	ACP	ACTP		
 99.0 % - 99.84%		%<=	%<=	%<=	%<=	%<=	%<=	%<=	%<=		
 Under Criteria		180s	120s	210s	150s	180s	120s	210s	150s		
By Media Type											
SATCOM	8,387	95.98%	99.03%	96.51%	99.48%	8,509	95.51%	98.88%	96.15%	99.29%	
VHF	19,536	94.12%	99.17%	94.89%	99.49%	21,953	94.21%	99.25%	94.95%	99.55%	
ALL	27,923	94.67%	99.13%	95.37%	99.48%	30,462	94.58%	99.15%	95.29%	99.48%	
By Remote Ground Station (RGS) Ground Earth Station (GES)											
Designator	Type	(RGS/GES With message counts >100)									
APK1	SAT	6441	95.91%	99.05%	96.41%	99.43%	6760	95.49%	98.80%	96.08%	99.20%
APK2	VHF	4998	95.42%	99.02%	95.94%	99.42%	4420	95.18%	99.08%	95.75%	99.63%
BMV1	VHF	574	97.55%	100.00%	97.94%	100.00%	589	97.98%	99.86%	98.11%	99.88%
CXR	VHF	1446	94.36%	99.85%	94.88%	99.88%	1473	95.01%	99.98%	95.43%	100.00%
CXR1	VHF						597	96.05%	100.00%	96.72%	100.00%
DAD	VHF	214	98.60%	100.00%	98.79%	100.00%	131	98.14%	100.00%	98.45%	100.00%
DAD1	VHF	141	96.41%	100.00%	97.85%	100.00%	179	99.34%	99.52%	99.61%	99.61%
DLI1	VHF	226	94.54%	100.00%	95.53%	100.00%	1898	94.30%	99.95%	94.90%	99.96%
IGW1	VHF	146	92.62%	99.81%	92.81%	100.00%	205	92.57%	98.46%	93.24%	99.05%
IOR2	SAT	259	96.80%	99.85%	97.11%	100.00%	50	98.27%	100.00%	98.41%	100.00%
LAO	VHF	135	99.45%	100.00%	99.52%	100.00%	86	99.65%	100.00%	99.84%	100.00%
N/A	VHF	480	56.56%	90.83%	64.17%	94.11%	60	97.28%	100.00%	97.52%	100.00%
NAW	VHF	103	97.64%	100.00%	97.85%	100.00%	8	100.00%	100.00%	100.00%	100.00%

PQC	VHF	136	98.24%	99.39%	98.48%	99.69%	28	94.55%	100.00%	96.45%	100.00%
SGN	VHF	1299	91.86%	99.96%	92.44%	100.00%	6	100.00%	100.00%	100.00%	100.00%
SGN1	VHF	667	90.70%	99.05%	91.82%	99.37%	909	89.10%	99.95%	89.88%	100.00%
SGN7	VHF	742	94.22%	99.25%	94.47%	99.30%	713	91.00%	99.72%	91.87%	99.75%
SYX	VHF	2099	96.47%	99.52%	97.17%	99.94%	54	96.60%	100.00%	96.86%	100.00%
TGG	VHF	960	96.96%	99.50%	97.69%	99.56%	842	96.48%	99.54%	96.66%	99.73%
UIH	VHF	444	97.47%	100.00%	98.06%	100.00%	715	97.13%	100.00%	97.80%	100.00%
UIH1	VHF	165	97.14%	99.83%	97.23%	100.00%	354	97.58%	99.88%	97.80%	100.00%
VCS	VHF	2304	95.15%	99.96%	95.52%	99.98%	1946	96.13%	100.00%	96.57%	100.00%
VCSV	VHF	140	92.87%	99.82%	93.00%	100.00%	294	94.93%	99.81%	95.25%	100.00%
XXA	SAT	1521	96.06%	98.82%	96.67%	99.54%	1612	95.79%	99.37%	96.53%	99.83%
XXP	VHF	1039	93.86%	97.64%	95.25%	98.63%	861	92.92%	97.19%	94.48%	97.75%

Table 3: CPDLC Performance by Media Type

ATTACHMENT D – CPDLC ANALYSIS BY AIRCRAFT OPERATOR AND TYPE.

Table 4 presents the CPDLC actual communications performance (APC) and CPDLC actual communication technical performance (ACTP) for messages sent within HCM FIR by operator for 2019.

FIR		HCM										
Criteria		RCP 240										
Period		Jan - Jun 2019					Jul - Dec 2019					
Colour key	Message Counts	95%		99.9%		95.0%	Message Counts	95%		99.9%		95.0%
		ACP %<= 180s	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s	PORT %<= 60s		ACP %<= 180s	ACTP %<= 120s	ACP %<= 210s	ACTP %<= 150s	PORT %<= 60s
 Meets criteria												
 99.0 % - 99.84%												
 Under Criteria												
By Aircraft Operator/Type												
AAR	432	94.52%	98.47%	95.87%	98.65%	90.15%	219	96.60%	99.44%	97.89%	99.64%	93.15%
ANA	449	95.80%	99.56%	96.00%	99.58%	92.47%	540	93.69%	99.53%	94.68%	99.66%	89.17%
AXM	511	94.47%	99.19%	95.50%	99.34%	91.39%	604	94.68%	99.66%	95.09%	99.78%	90.56%
CAL	1072	93.89%	99.51%	94.66%	100.00%	89.46%	1136	93.13%	99.02%	94.89%	99.48%	90.26%
CCA	225	94.67%	99.84%	94.84%	100.00%	91.38%	244	94.08%	98.99%	94.24%	99.23%	92.21%
CES	362	95.29%	99.50%	96.22%	99.55%	92.27%	515	94.07%	99.88%	94.68%	99.93%	90.49%
CPA	1492	93.46%	98.90%	94.10%	99.23%	90.01%	1940	93.55%	98.14%	94.37%	98.44%	89.54%
CRK	170	97.67%	99.24%	98.24%	100.00%	95.49%	254	97.36%	99.61%	97.57%	99.66%	93.98%
ETD	345	96.01%	99.63%	96.07%	100.00%	93.77%	322	96.06%	99.71%	96.20%	99.76%	94.76%
EVA	713	95.15%	99.07%	96.11%	99.48%	91.87%	780	96.12%	99.83%	96.84%	99.90%	92.31%
FDX	127	95.83%	98.71%	96.14%	99.20%	90.71%	94	90.15%	100.00%	91.17%	100.00%	77.43%
GIA	152	93.81%	100.00%	94.39%	100.00%	90.74%	42	98.43%	100.00%	98.84%	100.00%	96.77%
JAL	711	94.62%	99.43%	94.91%	99.86%	92.19%	798	94.15%	98.82%	94.87%	99.34%	90.48%

JST	148	91.28%	98.13%	91.60%	98.27%	88.44%	187	90.24%	100.00%	91.20%	100.00%	87.65%
KAL	1501	94.52%	98.73%	95.85%	99.25%	91.56%	1339	93.65%	98.81%	94.73%	99.41%	90.37%
MAS	1597	95.46%	99.39%	96.10%	99.43%	92.30%	1581	95.21%	99.69%	95.50%	99.73%	93.11%
OMA	147	96.26%	100.00%	96.70%	100.00%	93.99%	115	100.00%	100.00%	100.00%	100.00%	98.54%
QFA	116	96.16%	100.00%	96.67%	100.00%	90.95%	93	98.80%	98.14%	99.01%	98.59%	93.41%
QTR	402	97.75%	99.64%	97.89%	99.76%	95.02%	282	96.72%	100.00%	97.12%	100.00%	95.07%
RBA	148	93.97%	100.00%	94.38%	100.00%	87.04%	239	89.12%	99.51%	89.31%	99.66%	84.68%
SCO	1251	96.17%	99.61%	96.48%	99.85%	93.75%	1299	96.64%	99.60%	97.15%	99.78%	94.77%
SCO182	117	98.39%	100.00%	99.12%	100.00%	95.93%	135	95.50%	99.69%	95.73%	100.00%	92.94%
SIA	4868	94.35%	98.58%	95.09%	99.26%	91.15%	4213	94.18%	98.20%	94.90%	99.03%	91.31%
SLK	251	92.40%	99.71%	93.63%	99.86%	86.16%	96	92.64%	95.83%	94.69%	96.61%	84.52%
SQC	185	93.97%	100.00%	95.62%	100.00%	89.19%	265	91.93%	98.11%	92.45%	98.91%	89.34%
UAE	369	96.51%	98.78%	97.32%	99.46%	91.06%	267	95.97%	98.75%	97.45%	99.73%	93.33%
XAX	908	94.46%	99.52%	95.21%	99.60%	91.98%	1207	94.66%	99.71%	95.23%	99.84%	91.14%

Table 4: CPDLC Performance by Operator/Type