K5 Software Correlator Output Format
(FORMAT 7 Rev.7)

line#	items
1	"#FORMAT7" comments — "#FORMAT7" (fixed letters) + comments
	(comments are program name and fringe rotation parameters)
A1~A5 are inserted when filtering processing is carried out by "fx_cor"	
A1	# BPF parameters folowing shows set M-times BPF)
A2(1)	# flow(MHz)-fhigh(MHz) factor : 1.250000-1.450000 1.000000
	(1st BPF parameters)
repeat M times	
A2(M)	# flow(MHz)-fhigh(MHz) factor : 1.650000-1.850000 1.000000
	(last (M times) BPF parameters)
A3	# Adopted frequency resolution (MHz) = 0.040000
A4	# Output lag size = 2048
A5	# FFT size for processing = 2048
B1~B5 are inserted when PCAL rejection process is carried out in "fx_cor"	
B1	# PCAL rejection parameters (in case the number of CH is N)
B2(1)	# CH#01 start_freq(MHz) = 0.40 interval(MHz) = 5.0
	(PCAL rejection parameters for CH#01)
repeat (N times) PCAL rejection parameters	
B2(N)	# CH#N start_freq(MHz) = 2.40 interval(MHz) = 5.0
	(PCAL rejection parameters for CH#N)
B3	# Bandwidth to reject (MHz) = 0.50
C1~C6(N) are inserted when pulsar gate mode is used in "fx_cor"	
C1	# PULSAR Gate parameters
C2	# Epoch = 2012/186 04:15:00
C3	# Period (sec) = 1.337300
C4	# Duty = 0.100000
C5	# Phase (deg) at Epoch
C6(1)	# CH#01 = 215.000000
	...
C6(N)	# CH#N = 215.000000
following line is inserted when a-priori values upto 4th otder of Taylor coefficients are used	
D1	# TAU4DOT = -4.25203e-19
following line is inserted when choerence method is used for correlation processing	
E1	# Correlation method : new method (use coherence spectrum)
line# shown below is that for the case without filtering parameters, and pulsar gate	
2	host name — host PC name, or Correlator Name — such as "MK4", "DiFX" etc.
3	experiment code
4	scan# (starting from 1)
5	baseline ID
6	date and time of correlation processing (year totalday hour minute second month day)
7	X station name
8	X station position (x,y,z) (m)
9	X data file name
10	Y station name
11	Y station position (x,y,z) (m)
12	Y data file name
13	radio source name
14	radio source right ascension (hour minute second)
15	radio source declination (degree minute second)

16	epoch of radio source position (year)
17	Greenwhich apparent sidereal time at PRT (processing reference time) (hour minute second)
18	scan start time (year totalday hour minute second)
19	scan stop time (year totalday hour minute second)
20	PRT (year totalday hour minute second)
21	a-priori delay τ (sec) at PRT
22	a-priori delay rate $\dot{\tau}$ (s/s) at PRT
23	a-priori delay 2-dots $\ddot{\tau}$ (s/s^2) at PRT
24	a-priori delay 3-dots $d\ddot{\tau}/dt$ (s/s^3) at PRT
25	clock offset (sec) and , clock error of X station (sec)
	(Positive value menas Y clock tic earlier than X clock tic) (Positive value menas X clock tic earlier than UTC clock tic)
26	clock rate (s/s)
27	UT1-UTC (sec) Wob X (arcsec) Wob Y (arcsec) — earth orientation parameters
28	# of channels [N]
29	CH-1 RF frequency (Hz), PCAL frequency (Hz), sideband (1:USB, 0:LSB), [X-CH#, Y-CH# (X-Pol)(Y-Pol)]
	where Pol: polarization status 'R','L','X','Y','H','V','-', etc.
	. . .
·	CH-N RF frequency (Hz), PCAL frequency (Hz), sideband (1:USB, 0:LSB), [X-CH#, Y-CH# (X-Pol)(Y-Pol)]
29+N	sampling frequency (Hz)
30+N	X station AD resolution (1, 2, 4 or 8) Y station AD resolution (can be omitted)
31+N	unit integration period of PP (parameter period) (sec)
32+N	total integration period (sec)
33+N	# of lags [L]
34+N	total # of PP [K]
35+N	"PP# 1" — PP#1 start of correlation result
36+N	lag#, CH#, real part of correlation data, imaginary part of correlation data
repeat N×L times	
36+N(1+L)	"VALIDITY FLAG, BOPP TIME(sec), FRACTIONAL BIT and FRINGE PHASE (APRIORI)" — fixed letters
37+N(1+L)	vflag dtime ibit fbit ϕ1 [ϕ2 $\cdots$ ϕN]
	where
	vflag – data validity flag or weighting factor (0.0-1.0)
	(1: OK, 0: error occurred at the previous PP)
	dtime – time at BOPP (beginning of PP) (seconds from 0h UTC)
	ibit – integer delay at BOPP (in unit of sampling period)
	fbit – fractional portion of delay at BOPP (in unit of sampling period)
	ϕ1 – apriori fringe pahse (deg) at BOPP for ch #1
	ϕ2 – apriori fringe pahse (deg) at BOPP for ch #2
	....
	ϕN – apriori fringe pahse (deg) at BOPP for ch #N
38+N(1+L)	"X-PCAL" — fixed letters to show start of PCAL information for X station
39+N(1+L)	m ns PCALR PCALI AMP PHASE
	where
	m – channel #
	ns – # of samples used for PCAL detection
	PCALR – real part of PCAL detection
	PCALI – imaginary part of PCAL detection
	AMP – PCAL amplitude
	PHASE – PCAL phase (deg)
repeat N (# of channels) times	
39+N(2+L)	"Y-PCAL" — fixed letters to show start of PCAL information for X station
40+N(2+L)	m ns PCALR PCALI AMP PHASE — PCAL data for Y station
repeat N (# of channels) times	
40+N(3+L)	"PP# 2" — PP#2 start of correlation result

repeat K (total # of PPs) times
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