

SOFTWARE COMMUNICATIONS ARCHITECTURE SPECIFICATION

APPENDIX B

SCA APPLICATION ENVIRONMENT PROFILE



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APPENDIX B SCA APPLICATION ENVIRONMENT PROFILE

B.1 SCOPE

This appendix defines the Application Environment Profile (AEP) for the SCA, based on Standardized Application Environment Profile - POSIX[®] Realtime Application Support (AEP), IEEE Std 1003.13-2003.

The application environment profile (AEP), is the SCA required profile referenced in sections 3.1.1, 3.2.1, and 3.3.1 of the main document. The SCA dictates that an Operating Environment provides the options and functions designated as mandatory within this AEP and constrains an application to only use those services.

B.2 CONVENTIONS

With in this appendix, the following abbreviations are used:

1. “MAN” indicates that the identified function or option is mandatory for the indicated profile
2. “NRQ” indicates that the identified function or option is not required for the indicated profile
3. “PRT” indicates that only a subset of the indicated option or unit of functionality is required. This designation will be followed by a note or cross-reference indicating which elements are required.

B.3 STANDARDS

The standards identified in Table B-1 are required in whole or in part by the SCA AEP application environment profile.

Table B-1: Required Standards

Standard	SCA AEP
C Standard (ISO/IEC 9899:1999)	PRT ¹
POSIX (ISO/IEC 9945:2003)	PRT

B.4 CONSTRAINTS

The real-time profile defined in this appendix requires only specific Units of Functionality of the included standards. The absence of particular elements of these standards introduces constraints on the use of some of the features of particular functions. These constraints must be observed by an application that conforms to the profile when using each of the required functions.

[®] POSIX is a registered trademark of the Institute of Electrical and Electronics Engineers, Inc.

¹ Specific functions and options are identified in section B.4

An Ada AEP has not been explicitly defined. Any Ada application shall be restricted to using the equivalent Ada functionality, as defined in POSIX Ada language binding (ISO/IEC 14519:2001), designated as mandatory by the AEP or may use the C interface.

B.4.1 POSIX.1

The options, limits, and any other constraints on POSIX.1 shall be provided as described in Table B-2.

Table B-2: POSIX.1 Option Requirements

Option	AEP
{_POSIX_ASYNCHRONOUS_IO}	MAN
{_POSIX_CHOWN_RESTRICTED}	NRQ
{_POSIX_CLOCK_SELECTION}	NRQ
{_POSIX_FSYNC}	PRT ²
{_POSIX_MAPPED_FILES}	NRQ
{_POSIX_MEMLOCK_RANGE}	MAN
{_POSIX_MEMLOCK}	MAN
{_POSIX_MEMORY_PROTECTION}	NRQ
{_POSIX_MESSAGE_PASSING}	MAN
{_POSIX_MONOTONIC_CLOCK}	NRQ
{_POSIX_NO_TRUNC}	PRI
{_POSIX_PRIORITIZED_IO}	NRQ
{_POSIX_PRIORITY_SCHEDULING}	NRQ
{_POSIX_REALTIME_SIGNALS}	MAN
{_POSIX_SAVED_IDS}	NRQ
{_POSIX_SEMAPHORES}	MAN
{_POSIX_SHARED_MEMORY_OBJECTS}	NRQ
{_POSIX_SYNCHRONIZED_IO}	PRT ³
{_POSIX_THREAD_ATTR_STACKADDR}	MAN
{_POSIX_THREAD_ATTR_STACKSIZE}	MAN
{_POSIX_THREAD_CPUTIME}	NRQ
{_POSIX_THREAD_PRIO_INHERIT}	MAN
{_POSIX_THREAD_PRIO_PROTECT}	MAN
{_POSIX_THREAD_PRIORITY_SCHEDULING}	MAN

² fsync not required

³ fdatsync not required

Option	AEP
{_POSIX_THREAD_PROCESS_SHARED}	NRQ
{_POSIX_THREAD_SAFE_FUNCTIONS}	PRT ⁴
{_POSIX_THREAD_SPORADIC_SERVER}	NRQ
{_POSIX_TIMEOUTS}	NRQ
{_POSIX_TIMERS}	MAN
{_POSIX_TRACE_EVENT_FILTER}	NRQ
{_POSIX_TRACE_LOG}	NRQ
{_POSIX_TRACE}	NRQ
{_POSIX_VDISABLE}	NRQ

NOTES:

- PRI - The primary file system shall generate an error for pathname components longer than NAME_MAX. The user is responsible for semantics of other file systems that may be mounted.
- Embedded processor C/C++ run-time libraries typically do not support stdio.h or iostream.h.
- Heavy weight processes are typically not supported in embedded operating systems. The mandatory POSIX.1b options can be implemented without the use of heavy weight signaling.

B.4.1.1 Single Process Function Behavior

The functions in Table B-3 shall behave as described in the applicable clauses of the referenced POSIX referenced POSIX specifications contained in Table B-1.

Table B-3: POSIX_SINGLE_PROCESS Functions

Function	AEP
confstr()	NRQ
environ	NRQ
errno	NRQ
getenv ()	NRQ
setenv()	NRQ
sysconf ()	NRQ
uname ()	NRQ
unsetenv()	NRQ

B.4.1.2 Multi Process Function Behavior

The functions listed in Table B-4 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

⁴ See Table B-23: POSIX_THREAD_SAFE_FUNCTIONS Functions

Table B-4: POSIX_MULTI_PROCESS Functions

Function	AEP
_exit ()	NRQ
_Exit()	NRQ
assert ()	NRQ
atexit()	NRQ
clock()	NRQ
execl ()	NRQ
execle ()	NRQ
execlp ()	NRQ
execv ()	NRQ
execve ()	NRQ
execvp ()	NRQ
exit ()	NRQ
fork()	NRQ
getpgrp()	NRQ
getpid ()	NRQ
getppid ()	NRQ
setsid()	NRQ
sleep ()	NRQ
times ()	NRQ
wait()	NRQ
waitpid ()	NRQ

B.4.1.3 Job Control Function Behavior

The functions listed in Table B-5 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-5: POSIX_JOB_CONTROL Functions

Function	AEP
setpgid()	NRQ
tcgetpgrp()	NRQ
tcsetpgrp()	NRQ

B.4.1.4 Signals Function Behavior

Operating systems on embedded processors typically support neither signaling nor exception handling. POSIX does not define behaviors associated with divide by zero or overflow /

underflow. Signaling methods introduced as part of POSIX.1c are more consistent with the multi-threaded, single process model of a resource constrained processing environment.

The functions listed in Table B-6 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1, except for the following constraints:

1. An application that conforms to the AEP shall not result in abnormal termination of the process because this profile does not support multiple processes.
2. An application that conforms to the AEP shall not call the kill() function with a negative argument because this profile does not require process group functionality.

Table B-6: POSIX_SIGNALS Functions

Function	AEP
abort()	MAN
alarm()*	NRQ
kill()	MAN
pause()	MAN
raise()	MAN
sigaction()	MAN
sigaddset()	MAN
sigdelset()	MAN
sigemptyset()	MAN
sigfillset()	MAN
sigismember()	MAN
signal()	MAN
sigpending()	MAN
sigprocmask()	MAN
sigsuspend()	MAN
sigwait()	MAN

NOTES:

- * Functionality provided through the POSIX timers
- abort() is used to support assert() which is widely supported.

B.4.1.5 Signal Jump Function Behavior

The functions listed in Table B-7 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-7: POSIX_SIGNAL_JUMP Functions

Function	AEP
siglongjmp()	NRQ
sigsetjmp()	NRQ

B.4.1.6 User Group Function Behavior

The functions listed in Table B-8 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-8: POSIX_USER_GROUPS Functions

Function	AEP
getegid()	NRQ
geteuid()	NRQ
getgid()	NRQ
getgroups()	NRQ
getlogin()	NRQ
getlogin_r()	NRQ
getuid()	NRQ
setegid()	NRQ
seteuid()	NRQ
setgid()	NRQ
setuid()	NRQ

B.4.1.7 File System Function Behavior

The functions listed in Table B-9 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-9: POSIX_FILE_SYSTEM Functions

Function	AEP
access()	MAN
chdir()	MAN
closedir()	MAN
creat()	MAN
fpathconf()	MAN
fstat()	MAN
getcwd()	MAN

Function	AEP
link()	MAN
mkdir()	MAN
opendir()	MAN
pathconf()	MAN
readdir()	MAN
readdir_r()	MAN
remove()	MAN
rename()	MAN
rewinddir()	MAN
rmdir()	MAN
stat()	MAN
tmpfile()	MAN
tmpnam()	MAN
unlink()	MAN
utime()	MAN

NOTE:

- POSIX file system not generally supported in embedded operating systems.

B.4.1.8 File Attributes Function Behavior

The functions listed in Table B-10 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1, except for the following constraint:

1. An application that conforms to the AEP shall be guaranteed that the file mode creation mask for any object created by any process is S-IRWXU; that is, the object shall be fully accessible to the creator.

Table B-10: POSIX_FILE_ATTRIBUTES Functions

Function	AEP
chmod()	NRQ
chown()	NRQ
fchmod()	NRQ
fchown()	NRQ
umask()	NRQ

NOTE:

- POSIX file system not generally supported in embedded operating systems

B.4.1.9 File and Directory Management Function Behavior

The functions listed in Table B-11 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-11: POSIX_FD_MGMT Functions

Function	AEP
dup()	NRQ
dup2()	NRQ
fcntl()	NRQ
fgetpos()	NRQ
fseek()	MAN
fseeko()	MAN
fsetpos()	NRQ
ftell()	MAN
ftello()	MAN
ftruncate()	NRQ
lseek()	MAN
rewind()	MAN

NOTE:

- POSIX file system not generally supported in embedded operating systems.

B.4.1.10 Device I/O Function Behavior

The functions listed in Table B-12 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-12: POSIX_DEVICE_IO Functions

Function	AEP
clearerr()	MAN
close()	MAN
fclose()	MAN
fdopen()	MAN
feof()	MAN
ferror()	MAN
fflush()	MAN
fgetc()	MAN

Function	AEP
fgets()	MAN
fileno()	MAN
fopen()	MAN
fprintf()	MAN
fputc()	MAN
fputs()	MAN
fread()	MAN
freopen()	MAN

Function	AEP
fscanf()	MAN
fwrite()	MAN
getc()	MAN
getchar()	MAN
gets()	MAN
open()	MAN
perror()	MAN
printf()	MAN
putc()	MAN
putchar()	MAN
puts()	MAN
read()	MAN

Function	AEP
scanf()	MAN
setbuf()	MAN
setvbuf()	MAN
stderr()	NRQ
stdin()	NRQ
stdout()	NRQ
ungetc()	MAN
vfprintf()	NRQ
vfscanf()	NRQ
vprintf()	NRQ
vscanf()	NRQ
write()	MAN

NOTE:

- POSIX streams not generally supported in embedded operating systems.

B.4.1.11 Device-Specific Function Behavior

The functions listed in Table B-13 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-13: POSIX_DEVICE_SPECIFIC Functions

Function	AEP
cfgetispeed()	NRQ
cfgetospeed()	NRQ
cfsetispeed()	NRQ
cfsetospeed()	NRQ
ctermid()	NRQ
isatty()	NRQ
tcdrain()	NRQ
tcfloor()	NRQ
tcfloor()	NRQ
tcgetattr()	NRQ
tcsendbreak()	NRQ
tcsetattr()	NRQ
ttyname()	NRQ
ttyname_r()	NRQ

B.4.1.12 System Database Function Behavior

The functions listed in Table B-14 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-14: POSIX_SYSTEM_DATABASE Functions

Function	AEP
getgrgid()	NRQ
getgrgid_r()	NRQ
getgrnam()	NRQ
getgrnam_r()	NRQ
getpwnam()	NRQ
getpwnam_r()	NRQ
getpwuid()	NRQ
getpwuid_r()	NRQ

B.4.1.13 Pipe Function Behavior

The function listed in Table B-15 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-15: POSIX_PIPE_Function

Function	AEP
pipe()	NRQ

B.4.1.14 FIFO Function Behavior

The function listed in Table B-16 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-16: POSIX_FIFO Function

Function	AEP
mkfifo()	NRQ

B.4.1.15 C Language-Specific Support Services Function Behavior

The functions listed in Table B-17 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-17: POSIX_C_LANG_SUPPORT Functions

Function	AEP
fesetenv()	NRQ
abs()	MAN
asctime()	MAN
asctime_r()	MAN
atof()	MAN
atoi()	MAN
atoll()	MAN
atoll()	NRQ
bsearch()	MAN
calloc()	MAN
ctime()	MAN
ctime_r()	MAN
difftime()	NRQ
div()	NRQ
feclearexcept()	NRQ
fegetenv()	NRQ
fegetexceptflag()	NRQ
fegetround()	NRQ
feholdexcept()	NRQ
feraiseexcept()	NRQ
fesetexceptflag()	NRQ
fesetround()	NRQ
fetestexcept()	NRQ
feupdateenv()	NRQ
free()	MAN
gmtime()	MAN
gmtime_r()	MAN
imaxabs()	NRQ
imaxdiv()	NRQ
isalnum()	MAN
isalpha()	MAN
isblank()	NRQ
iscntrl()	MAN

Function	AEP
isdigit()	MAN
isgraph()	MAN
islower()	MAN
isprint()	MAN
ispunct()	MAN
isspace()	MAN
isupper()	MAN
isxdigit()	MAN
labs()	NRQ
ldiv()	NRQ
llabs()	NRQ
lldiv()	NRQ
localeconv()	NRQ
localtime()	MAN
localtime_r()	MAN
malloc()	MAN
memchr()	NRQ
memcmp()	NRQ
memcpy()	NRQ
memmove()	NRQ
memset()	NRQ
mktime()	MAN
qsort()	MAN
rand()	MAN
rand_r()	MAN
realloc()	MAN
setlocale ()	MAN
snprintf()	NRQ
sprintf()	MAN
srand()	MAN
sscanf()	MAN
strcat()	MAN
strchr()	MAN

Function	AEP
strcmp()	MAN
strcoll()	NRQ
strcpy()	MAN
strcspn()	MAN
strerror()	NRQ
strerror_r()	NRQ
strftime()	MAN
strlen()	MAN
strncat()	MAN
strncmp()	MAN
strncpy()	MAN
strpbrk()	MAN
strrchr()	MAN
strspn()	MAN
strstr()	MAN
strtod()	NRQ
strtof()	NRQ
strtoimax()	NRQ
strtok()	MAN
strtok_r()	MAN

Function	AEP
strtol()	NRQ
strtold()	NRQ
strtoll()	NRQ
strtoul()	NRQ
strtoull()	NRQ
strtoumax()	NRQ
strxfrm()	NRQ
time()	MAN
tolower()	MAN
toupper()	MAN
tzname,	NRQ
tzset()	NRQ
va_arg()	NRQ
va_copy()	NRQ
va_end()	NRQ
va_start()	NRQ
vsprintf()	NRQ
vsprintf()	NRQ
vsscanf()	NRQ

NOTE:

- Support for dynamic memory allocation is essential to re-entrant object-oriented design.

B.4.1.16 C Language-Specific Mathematical Function Behavior

The functions listed in Table B-18 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-18: POSIX_C_LANG_MATH Functions

Function	AEP
acos()	MAN
acosf()	NRQ
acosh()	NRQ
acoshf()	NRQ
acoshl()	NRQ
acosl()	NRQ

asin()	MAN
asinf()	NRQ
asinh()	NRQ
asinhf()	NRQ
asinhf()	NRQ
asinhf()	NRQ
asinhf()	NRQ
asinhf()	NRQ
atan()	MAN

atan2()	MAN
atan2f()	NRQ
atan2l()	NRQ
atanf()	NRQ
atanh()	NRQ
atanhf()	NRQ
atanhl()	NRQ
atanl()	NRQ
cabs()	NRQ
cabsf()	NRQ
cabsl()	NRQ
acos()	NRQ
acosf()	NRQ
acosh()	NRQ
acoshf()	NRQ
acoshl()	NRQ
acosl()	NRQ
carg()	NRQ
cargf()	NRQ
cargl()	NRQ
casin()	NRQ
casinf()	NRQ
casinh()	NRQ
casinhf()	NRQ
casinhl()	NRQ
casinl()	NRQ
catan()	NRQ
catanf()	NRQ
catanh()	NRQ
catanhf()	NRQ
catanhl()	NRQ
catanl()	NRQ
cbrt()	NRQ
cbrtf()	NRQ
cbrtl()	NRQ
ccos()	NRQ

ccosf()	NRQ
Ccosh()	NRQ
ccoshf()	NRQ
ccoshl()	NRQ
ccosl()	NRQ
ceil()	MAN
ceilf()	NRQ
ceill()	NRQ
cexp()	NRQ
cexpf()	NRQ
cexpl()	NRQ
Cimag()	NRQ
cimagf()	NRQ
cimagl()	NRQ
clog()	NRQ
clogf()	NRQ
clogl()	NRQ
conj()	NRQ
conjf()	NRQ
conjl()	NRQ
copysign()	NRQ
copysignf()	NRQ
copysignl()	NRQ
cos()	MAN
cosf()	NRQ
cosh()	MAN
coshf()	NRQ
coshl()	NRQ
cosl()	NRQ
cpow()	NRQ
cpowf()	NRQ
cpowl()	NRQ
cproj()	NRQ
cprojf()	NRQ
cprojl()	NRQ
creal()	NRQ

crealf()	NRQ
creall()	NRQ
csin()	NRQ
csinf()	NRQ
csinh()	NRQ
csinhf()	NRQ
csinhl()	NRQ
csinl()	NRQ
csqrt()	NRQ
csqrtf()	NRQ
csqrtl()	NRQ
ctan()	NRQ
ctanf()	NRQ
ctanh()	NRQ
ctanhf()	NRQ
ctanhl()	NRQ
ctanl()	NRQ
erf()	NRQ
erfc()	NRQ
erfcf()	NRQ
erfcl()	NRQ
erff()	NRQ
erfl()	NRQ
exp()	MAN
exp2()	NRQ
exp2f()	NRQ
exp2l()	NRQ
expf()	NRQ
expl()	NRQ
expm1()	NRQ
expm1f()	NRQ
expm1l()	NRQ
fabs()	MAN
fabsf()	NRQ
fabsl()	NRQ
fdim()	NRQ

fdimf()	NRQ
fdiml()	NRQ
floor()	MAN
floorf()	NRQ
floorl()	NRQ
fma()	NRQ
fmaf()	NRQ
fmal()	NRQ
fmax()	NRQ
fmaxf()	NRQ
fmaxl()	NRQ
fmin()	NRQ
fminf()	NRQ
fminl()	NRQ
fmod()	MAN
fmodf()	NRQ
fmodl()	NRQ
fpclassify()	NRQ
frexp()	MAN
frexpf()	NRQ
frexpl()	NRQ
hypot()	NRQ
hypotf()	NRQ
hypotl()	NRQ
ilogb()	NRQ
ilogbf()	NRQ
ilogbl()	NRQ
isfinite()	NRQ
isgreater()	NRQ
isgreaterequal()	NRQ
isinf()	NRQ
isless()	NRQ
islessequal()	NRQ
islessgreater()	NRQ
isnan()	NRQ
isnormal()	NRQ

isunordered()	NRQ
ldexp()	MAN
ldexpf()	NRQ
ldexpl()	NRQ
lgamma()	NRQ
lgammaf()	NRQ
lgammal()	NRQ
llrint()	NRQ
llrintf()	NRQ
llrintl()	NRQ
llround()	NRQ
llroundf()	NRQ
llroundl()	NRQ
log()	MAN
log10()	MAN
log10f()	NRQ
log10l()	NRQ
log1p()	NRQ
log1pf()	NRQ
log1pl()	NRQ
log2()	NRQ
log2f()	NRQ
log2l()	NRQ
logb()	NRQ
logbf()	NRQ
logbl()	NRQ
logf()	NRQ
logl()	NRQ
lrint()	NRQ
lrintf()	NRQ
lrintl()	NRQ
lround()	NRQ
lroundf()	NRQ
lroundl()	NRQ
modf()	MAN
modff()	NRQ

modfl()	NRQ
nan()	NRQ
nanf()	NRQ
nanl()	NRQ
nearbyint()	NRQ
nearbyintf()	NRQ
nearbyintl()	NRQ
nextafter()	NRQ
nextafterf()	NRQ
nextafterl()	NRQ
nexttoward()	NRQ
nexttowardf()	NRQ
nexttowardl()	NRQ
pow()	MAN
powf()	NRQ
powl()	NRQ
remainder()	NRQ
remainderf()	NRQ
remainderl()	NRQ
remquo()	NRQ
remquof()	NRQ
remquol()	NRQ
rint()	NRQ
rintf()	NRQ
rintl()	NRQ
round()	NRQ
roundf()	NRQ
roundl()	NRQ
scalbln()	NRQ
scalblnf()	NRQ
scalblnl()	NRQ
scalbn()	NRQ
scalbnf()	NRQ
scalbnl()	NRQ
signbit()	NRQ
sin()	MAN

sinf()	NRQ
sinh()	MAN
sinhf()	NRQ
sinhl()	NRQ
sinl()	NRQ
sqrt()	MAN
sqrtf()	NRQ
sqrtrl()	NRQ
tan()	MAN
tanf()	NRQ

tanh()	MAN
tanhf()	NRQ
tanhl()	NRQ
tanl()	NRQ
tgamma()	NRQ
tgammaf()	NRQ
tgammal()	NRQ
trunc()	NRQ
truncf()	NRQ
truncl()	NRQ

B.4.1.17 C Language-Specific Non-local Jump Function Behavior.

The functions listed in Table B-19 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-19: POSIX_C_LANG_JUMP Functions

Function	AEP
longjmp()	MAN
setjmp()	MAN

NOTE:

- This is a form of context switch used to support a non-local exit.

B.4.1.18 POSIX Semaphore Function Behavior

The functions listed in Table B-20 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-20. POSIX_SEMAPHORES Functions

Function	AEP
sem_close()	MAN
sem_destroy()	MAN
sem_getvalue()	MAN
sem_init()	MAN
sem_open()	MAN
sem_post()	MAN
sem_trywait()	MAN
sem_unlink()	MAN
sem_wait()	MAN

B.4.1.19 POSIX Timer Function Behavior

The functions listed in Table B-21 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-21. POSIX_TIMERS Functions

Function	AEP
clock_getres()	MAN
clock_gettime()	MAN
clock_settime()	MAN
nanosleep()	MAN
timer_create()	MAN
timer_delete()	MAN
timer_getoverrun()	MAN
timer_gettime()	MAN
timer_settime()	MAN

B.4.1.20 POSIX Threading Function Behavior

The functions listed in Table B-22 shall behave as described in the applicable clauses of the referenced POSIX specifications contained in Table B-1.

Table B-22. POSIX_THREADS_BASE Functions

Function	AEP
pthread_atfork()	NRQ
pthread_attr_txxx()	MAN
pthread_cancel()	MAN
pthread_cleanup_txxx()	MAN
pthread_cond_txxx()	MAN
pthread_condattr_txxx()	MAN
pthread_create()	MAN
pthread_detach()	MAN
pthread_equal()	MAN
pthread_exit()	MAN
pthread_getschedparam()	MAN
pthread_getspecific()	MAN
pthread_join()	MAN
pthread_key_txxx()	MAN

Function	AEP
pthread_kill()	MAN
pthread_mutex_xxx()	MAN
pthread_mutexattr_xxx()	MAN
pthread_once()	MAN
pthread_self()	MAN
pthread_setcancelstate()	MAN
pthread_setcanceltype()	MAN
pthread_setschedparam()	MAN
pthread_setspecific()	MAN
pthread_sigmask()	MAN
pthread_testcancel()	MAN

B.4.1.21 POSIX Thread Safe Option Requirements Behavior

The function listed in Table B-23 shall behave as described in the referenced clause.

Table B-23: POSIX_THREAD_SAFE_FUNCTIONS Functions

Function	AEP
asctime_r()	MAN
ctime_r()	MAN
flockfile()	NRQ
ftrylockfile()	NRQ
funlockfile()	NRQ
getc_unlocked()	NRQ
getchar_unlocked()	NRQ
getgrgid_r()	NRQ
getgrnam_r()	NRQ
getlogin_r()	NRQ
getpwnam_r()	NRQ

Function	AEP
getpwuid_r()	NRQ
gmtime_r()	MAN
localtime_r()	MAN
putc_unlocked()	NRQ
putchar_unlocked()	NRQ
rand_r()	MAN
readdir_r()	MAN
strerror_r()	NRQ
strtok_r()	MAN
ttyname_r()	NRQ