

## WG 14 N1786

### WG14 CFP meeting minutes for the meeting of 2013/12/12

2013/12/12, 9:00 PST, 12:00 EST:

**Attendees:** Jim, Rajan, Mike, Fred, David, Ian

#### Old action items:

Jim: Look into using the Wiki as a backup for the documents in Word format. - Most current version has been put up. Keep this item open. - Continuing to be done

Jim: Part 2: Will go with `_Decimal32/64/128` ordering and Jim will follow up with Joseph to see if he agrees. - Done

Jim: Part 2: Draft wording changes (based on Josephs email) regarding decimal vs generic radix 10 static rounding mode and we will review. - Done

All: Part 2: A document will have to be delivered before the December meeting so please watch emails and respond quickly. - Done

\*Jim: Part 1/2/3/4: Add a note regarding the `a/b/c/...` clause suffix meaning and reasoning for parts 2 on (since 1 is in ballot). Also check to see if this can be added in Part 1 as well. - Not done

Jim: Part 3: Try to use the math symbols for ceiling and floor instead of the words ceiling and floor. - Done

Jim: Part 4: Look for opportunities for shortening function lists by removing suffixes. - Not done

Jim: Part 4: Send a note to the IEEE-754 group to get review of the draft from them. - Not done

Jim: Part 4: Remove the bold N in 5.3 function lists. - Done

Jim: Part 4: Add in issue: We don't require conformance to part 3, and don't say `_FloatNx` (for example) must follow Part 3 so the functions are defined but are not the same as intended if an implemenatation has `_FloatNx` types but not Part 3 based. - Done/Closed

Jim: Part 4: Pi functions: Drop the second "half-revolutions" - Done

Jim: Part 4: `atan2pi`: Flag the description wording as an issue. - Done

Jim: Part 4: `atan2pi`: Add in `atan2pi` has a domain error for both arguments being zero. - Done

Jim: Part 4: `log21p`: Add in issue: It could be read as `log 21 p` instead of `log2 1p`. - Done

Jim: Part 4: `rsqrt`: Need to add a domain error. - Done

Jim: Part 4: `compoundn`: Add an issue: Why is it not an long long int? - Done

#### Next Meeting:

January 7th, 2014, 12:00 EST, 9:00 PDT - Tuesday

Same teleconference number.

### **New action items:**

Jim: Backup the documents in Word format. - Most current version has been put up. Keep this item open.

Current files: <http://wiki.edg.com/twiki/pub/CFP/WebHome/cfp1.docx>

Current files: <http://wiki.edg.com/twiki/pub/CFP/WebHome/cfp2.docx>

Current files: <http://wiki.edg.com/twiki/pub/CFP/WebHome/cfp3.docx>

Current files: <http://wiki.edg.com/twiki/pub/CFP/WebHome/cfp4.docx>

Note: Should also keep versions that are equivalent to PDF's.

Jim: Part 3: Bring up the clause letter numbering issue at the WG14 meeting and get direction on where to put it (since the C Standard editor is normally there).

Jim: Part 3: Get a WG14 document number and post it and ask for review from the 754 group as well.

Jim: Part 4: Page 5: Fred's note first comment (2013/12/12 note) - Jim to fix.

Jim: Part 4: Page 6: Fred's note second comment (2013/12/12) - Add to the description of atan2pi that atan2pi is atan2/pi.

Jim: Part 4: Page 10: Leave issue 2 but add in other log\*p\* naming suggestions made as part of the issue.

Jim: Part 4: Page 11: See if the issue 3 comment can fit in the binding clause.

Jim: Part 4: Page 13: Add in the comment from 754 describing where this powr function comes from.

Jim: Part 4: Page 15: Lines 14, 20 boundaries should be -1 not 0. Also the x should be lower case (including line 26).

Jim: Part 4: Page 16: Make the change to the sum range to follow C indexes. Applies to later functions using similar notation (up to page 19).

Jim: Part 4: Page 18: Line 17: sumabs -> sumprod.

Fred: Part 4: Page 18: sumprod: See if the arrays have to be non-overlapping and to see if we need to add restrict here.

Jim: Part 4: Page 21: Line 10: Change (sum) -> (each of which is a sum)

David: Part 4: Page 21: Email other suggestions to the group for action item above.

Jim: Part 4: Add in the 754 operation to C function name binding table as in previous parts into this part.

Jim: Part 4: Get a WG14 document number and post it and ask for review from the 754 group as well.

### **Discussion:**

Part 1: Out for ISO DTS ballot. Ballot ends March 5th, 2014.

If no significant comments, no more ballots needed.

Editorial changes can be made, including removing table numbers to match the C standard.

Part 2: Out for first ISO ballot (PDTs). Ballot ends March 10th, 2014.

WG14 meeting is April 7th to 11th so we should have the recommended responses at least two weeks before that.

Fred: Suffixes issue will potentially affect this part as well as part 3.

- Will be discussed in Part 3.

#### Part 3:

Evaluation methods for Part 3 types – see Nov 30 email

Agreed to the proposal given in the email.

Similar change for decimal evaluation.

Floating-suffixes for decimal – see emails Dec 2,3

Converging on options 2 or 3. i.e. Full list of suffixes.

Slight leaning towards duplicate. Will leave it as an issue, and have the text as duplicate.

Clause suffix/paragraph suffix letter action item from last meeting:

ISO template has it at the start of the document already. If we try to do it would renumber following sections.

Rajan: Can we put it in under a paragraph without a number/renumbering?

Jim: May not meet ISO review. It is under the symbols and abbreviated terms section in the template (Clause 5).

The template does say it can be combined with Terms and definitions (Clause 4).

\*AI\* Jim: We could bring it up at the WG14 meeting and get direction on where to put it (since the C Standard editor is normally there).

Fred's email on 2013/12/12:

Does not seem to be confusing for others. No change.

\*AI\* We can get a WG14 document number and post it and ask for review from the 754 group as well.

#### Part 4:

Changes:

pg 5: OK with change

\*AI\* Fred's note first comment (2013/12/12 note) - Jim to fix.

pg 6: Issue 1:

\*AI\* Fred's note second comment (2013/12/12) - Jim: Add to the description of atan2pi that atan2pi is atan2/pi.

pg 10: Issue 2:

David: Suggestion: How about log1p10 and log1p2?

Jim: Inconsistent with exp (ex. exp2m1, exp10m1).

754 has log2p1 and logp1 (whereas C has log1p).

David: Can also live with the inconsistency and leave it log2p1 and log10p1.

\*AI\* Jim: Leave issue 2 but add in other suggestions made as part of the issue.

pg 11: OK with first change

Issue 3: C has min 32 bits for long int.

David: Sounds like it is large enough for any conceivable use.

Fred: The description in the issue sounds good for the rationale.

We can add this comment as part of the binding rather than as part of the rationale.

\*AI\* Jim: See if the issue 3 comment can fit in the binding clause.

pg 13: Difference to pow is domain error if x is less than zero.

Fred's note third comment (2013/12/12)

r stands for real (vs complex)

\*AI\* Jim: Add in the comment from 754 describing where this powr function comes from.

David: Keeping the special cases in the same order as 754 can reduce confusion.

Fred: Line 14: Should it read "non-negative x raised to the power of y"?

Jim: Confuses the case for -0.

Jim: If anyone finds a better order please propose it.

Fred: Some cases for qNaN's that are not here.

David: We don't list NaN arguments just NaN results in general.

Fred: powr(x, qNaN) gives qNaN for  $x > 0$  is one case 754 lists.

Jim: Normal case of NaN's flowing through so we should not have to state it.

Fred: Some special cases in pow that list NaNs so we should do it for powr.

Jim: We do that. The ones that are mentioned are the ones that go against the normal rules.

pg 15:

Line 14/20: The boundaries should be -1 not 0. Also the x should be lower case (including line 26).

\*AI\* Jim to change pg 15, line 14, 20 boundaries should be -1 not 0. Also the x should be lower case (including line 26).

pg 16:

Rajan: Seems to mix C and math symbols so it should be sum range of 0 to n-1.

\*AI\* Jim: Make the change to the sum range to follow C indexes. Applies to later functions using similar notation (up to page 19).

pg 18:

Fred: Can the arrays overlap? Since it is a read it shouldn't matter.

Line 17: Typo: sumabs -> sumprod

\*AI\* Jim: Fix typo on page 18, line 17: sumabs -> sumprod.

Fred: You can put restrict in [] if needed.

\*AI\* Fred: See if the arrays have to be non-overlapping and to see if we need to add restrict here.

pg 19:

Sum ranges needs to change here as well.

Fred: Restrict needs to be considered here as well.

pg 21:

Fred: The (sum) makes no sense to me. Applies to other parts here as well.

Jim: The factors are sums. There is no running product (that is the implementation).

David: Perhaps say "each of which is a sum"?

\*AI\* Jim: Part 4: Page 21 line 10: Change (sum) -> (each of which is a sum)

\*AI\* David: Email other suggestions to the group.

Question: Has anyone implemented these functions? Any prospects of someone working on them? Marius has mentioned that Intel has implemented all of these.

Lots of edge cases with exceptions and implementing the right exceptions (or none) in the right locations.

Ex. Any NaN means no signals, but if you had -Inf, Inf then you have to have an exception, so a later NaN would result in removing that previously generated exception!

\*AI\* Jim: Add in the 754 operation to C function name binding table as in previous parts into this part.

\*AI\* Jim: Get a WG14 document number and post it and ask for review from the 754 group as well.

We can add another document that puts in all the parts into C11 as a separate document.

Fred: Good idea, but hard to do Word+troff merge.

Regards,

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