IEEE P802.11
Wireless LANs

11k D12.0 to REVCOM

Date: 2008-02-15

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Abstract

This document is the report to REVCOM on the submittal of P802.11k D12.0 for REVCOM review.

IEEE P802.11k Wireless LANs
Radio Resource Measurement of Wireless LANs
Report to forward P802.11k D12.0 to REVCOM

Date: 2008-2-15

Author(s):

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Abstract
This is the report to be submitted to REVCOM to request recommendation of P802.11k D12.0 to move to IEEE SASB for publication.

IEEE P802.11k Sponsor Ballot Recirculation #4 balloted D12.0. P802.11k Recirculation #5 is a recirculation with no changes to D12.0.

This report to the REVCOM documents the conditions in 5.4.3.2 of the SA Standards Operations Manual to forward to IEEE SASB for publication.

From the SA Standards Operations Manual:

Conditions:

Comments received before the close of ballot from persons who are not in the balloting group, including from the mandatory coordination entities, require acknowledgement sent to the commenter and shall be presented to the comment resolution group for consideration. The Sponsor shall send an explanation of the disposition of the mandatory coordination comments to the commenter.

One comment was received from SCC14 Coordination Committee stating things were OK and not suggesting any change was needed. An email was sent to Mike Kipness/SCC14 in response.

Comments received after the close of ballot will be forwarded to the Sponsor for consideration at the next update of the standard. If a comment is received as a result of a public review process, that comment will be addressed by the Sponsor and a disposition returned to the commenter, along with information concerning their right of appeal.

No comments were received after the close of the P802.11k fifth recirculation ballot.

Negative voters may indicate acceptance of the response to any or all comments associated with their negative vote. If the negative vote is not satisfied, either entirely or in part, the negative voter shall be given an opportunity to review comment responses and either to change his or her vote to "approve" or to retain his or her negative vote during a recirculation ballot.

No Sponsor Ballot voter changed a vote from “Disapprove” to “Approve” in the P802.11k fifth Sponsor Ballot recirculation.

Changes may be made in the document to resolve negative votes that are accompanied by comments or for other reasons. All substantive changes made since the last balloted draft shall be identified and recirculated to the Sponsor balloting group. All unresolved negative votes with comments shall be recirculated to the Sponsor balloting group. The verbatim text of each comment, the name of the negative voter, and a rebuttal by the members conducting the resolution of comments shall be included in the recirculation ballot package. Responses to comments should include sufficient detail for ballot group members to understand the rationale for rejection of the comment or revision of the change proposed by the commenter.

No substantive changes have been made since the last draft (D12.0) recirculated in P802.11k Recirculation #4 and again in P802.11k Recirculation #5. All negative comments from DISAPPROVE voters were presented at each recirculation.

During a recirculation ballot, balloting group members shall have an opportunity to change their previously cast ballots. A change to "do not approve," which is submitted with comments, shall be based only on the changed portions of the balloted document, clauses affected by the changes, or portions of the balloted document that are the subject of the unresolved negative votes. If a change to "do not approve" is based solely on comments concerning previously approved portions of the balloted document, the balloter shall be informed that the comments are not based on the changed portion of the balloted document. Such comments need not be addressed in the current ballot and may be considered for a future revision of the standard. If the balloter does not change the negative ballot, the ballot may be submitted to RevCom as an unresolved negative without comment.

No Sponsor Ballot voter changed a vote from “Approve” to “Do Not Approve” in any P802.11k Sponsor Ballot recirculation. All negative comments from DISAPPROVE voters were presented at each P802.11k recirculation.

Further resolution efforts, including additional recirculation ballots, shall be required if negative votes with new comments within the scope of the recirculation result. Once all required recirculations have been completed and 75% approval has been achieved, the IEEE requirements for consensus have been met. Efforts to resolve negative votes may continue for a brief period; however, should such resolution not be possible in a timely manner, the Sponsor should forward the submittal to RevCom because the IEEE has an obligation to the majority to review and publish the standard quickly.

5th P802.11k Recirculation Sponsor Ballot Open Date: 2008-2-4
5th P802.11k Recirculation Sponsor Ballot Close Date: 2008-2-14

The only two comments that were received in P802.11k Recirculation #5 were from a DISAPPROVE voter about the resolutions of their P802.11k Recirculation #4 comments. These are not new comments within the scope of P802.11k Recirculation #5 and actions are detailed below.

Conditions for consensus have been met:

- P802.11k 5th Recirculation Vote Tally

  105 Approve
  5 Disapprove [Chaplin, Engwer, Hansen, Paine (on behalf of Aboba who is not a P802.11k Sponsor Ballot Pool member), Palm]
  5 Abstain
  115 Total

  95% Affirmative

In P802.11k Recirculation #5, no new comments within the scope of the recirculation were received.

Copies of all unresolved negative votes, together with the reasons given by the negative voters and the rebuttals by the Sponsor, shall be included with the ballot results submitted to RevCom. Copies of the written confirmations from voters that indicate concurrence with the change of their votes from negative to affirmative shall be included in the submittal to RevCom.

Copies of all unresolved negative comments from “Do Not Approve” voters and their comment resolutions from the Sponsor Ballot and its recirculations are attached to this document. No votes were changed subsequent to the end of P802.11k Recirculation #5.

The Sponsor shall, if not included in a recirculation package, provide to the negative voter and to RevCom an explanation why any comments associated with a negative vote were not required to be recirculated. In order for a negative vote to be changed to an affirmative vote, the Sponsor shall obtain and provide to RevCom written confirmation from each voter (by letter, fax, or electronic mail) that indicates concurrence with any change of his or her vote. Any negative vote with comment that RevCom is to consider as a negative without comment shall be explained to RevCom.

Two comments were received from a negative voter in P802.11k Recirculation #5; these two comments and their resolutions attached here do not require recirculation. These two comments were not new comments within the scope of the recirculation. The two comments are resubmissions of the same comments (P802.11k Recirculation #4) and not comments on changed text for this recirculation (P802.11k Recirculation #5).

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IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D8.** *SC* **D** *P* **127** *L* # 7

Paine, Richard Individual

Comment Type **T** *Comment Status* **R**

LB96#18-Aboba: The modified IEEE 802.11 MIB, including all the changes, does not appear to have been run through a MIB compiler to test whether it will compile.

SuggestedRemedy

Issue a MIB file including all of the changes, then run the updated MIB through a MIB compiler, correcting the errors.

Response *Response Status* **C**

REJECT.
This comment will be addressed after D9.0.

Cl **11k-D8.** *SC* **7.3.2.21** *P* **17** *L* **17** # 230

Hansen, C Individual

Comment Type **TR** *Comment Status* **R**

there's no restriction on how often a measurement request can be made. what is the expected behavior if this happens?

SuggestedRemedy

set maximum frequency allowable for measurement requests to once per 30 secs

Response *Response Status* **C**

REJECT.
A STA has the option to reject a measurement (11.10.4). P88L7 indicates that only one measurement request frame may be active in any STA at any time. A new measurement request frame may be sent at any time (no time or frequency limitation) to supercede the prior measurement request frame.

Cl **11k-D8.** *SC* **11.1** *P* **85** *L* **35** # 232

Hansen, C Individual

Comment Type **TR** *Comment Status* **R**

There are no guidlines or limits defined in this section for how often measurements can be made. This is unacceptable. All measurements will have an effect on the network capacity and the thoughput available to stations incorporating these measurements. Implementations need guidance from the IEEE as to how often to make these measurements.

SuggestedRemedy

Add new text describing typical scenarios for how measurements are to be used.

Response *Response Status* **C**

REJECT.
Rate, range, transmit power, regulatory classes, location, are all delimiters on the ability to provide services. The requirements and issues document produced by 11k provide those scenarios and the justification for a measurement service (02/508rX).

Cl **11k-D8.** *SC* **11.10.2** *P* **86** *L* **24** # 233

Hansen, C Individual

Comment Type **TR** *Comment Status* **R**

accuracy of +/- 1 TU is with respect to what point in time? one measurement may require multiple accesses to the radio, and those radio requests may not be serviced immediately

SuggestedRemedy

remove accuracy mandate

Response *Response Status* **C**

REJECT.
REJECT TGk does not specify a measurement start time. The accuracy requirement referenced here is the accuracy of the reported actual measurement start time. Processing delays to initiate a measurement are permitted and do not affect the reported actual start time accuracy. Refer to Clause 11.1 for BSS synchronization accuracy requirements.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **233** 2/15/2008 4:00:03 PM

IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D8.** *SC* **11.10.5** *P* **89** *L* **13** # 234

Hansen, C Individual

Comment Type **TR** *Comment Status* **R**

"NOTE--Since measurements on non-operating channels could potentially degrade a station's performance,
non-operating channel measurements should be requested sparingly and for short durations." This language is too weak and does not do enough to protect network performance from poorly organized or excessive measurement requests that could severely degrade QoS. Don't leave this to the WiFi alliance to solve. This should be resolved in the IEEE.

SuggestedRemedy

Add specific requirements for when non-operating channel measurements can be made. For example, if an AP has data queued for a particular STA it is not allowed to request non-operating channel measurements for that STA. This needs to be a requirement on the AP, not on the STA. Only STAs have low activity (in terms of communicated data frames in either direction with the AP) should be requested to make non-operating channel measurements.

Response *Response Status* **C**

REJECT.
The suggested remedy is beyond the scope of 11k, e.g. if the measuring STA is operating on a noisy channel the user's policy may be to find a quieter channel, requiring higher than normal priority for off-channel measurements. For busy STAs, clause 11.10.4 describes how measurements may appropriately be refused.

Cl **11k-D9.** *SC* **I** *P* **183** *L* **1** # 1154

Chaplin, Clint Individual

Comment Type **T** *Comment Status* **R**

WM: The scope of this amendment, as stated in the PAR, is "This project will define Radio Resource Measurement enhancements to provide interfaces to higher layers for radio and network measurements." This does not include changes to regulatory matters

SuggestedRemedy

Delete the changes to AnnI, and submit them to TGmb, or to a Task Group that includes regulatory matters in its scope.

Response *Response Status* **C**

REJECT.
802.11-2007 defines operation in Part 15 license-exempt bands for several PHYs, and this amendment enhances operation with means to specify radio measurements in those bands. To specify the radio channel for measurement, this amendment creates Regulatory Classes for Part 15 license-exempt bands, so that the combination of Regulatory Class and Channel Number uniquely specify channel measurement parameters e.g., channel bandwidth. 11k would be incomplete and incorrect without these changes.

Cl **11k-D9.** *SC* **J** *P* **185** *L* **1** # 1155

Chaplin, Clint Individual

Comment Type **T** *Comment Status* **R**

WM: The scope of this amendment, as stated in the PAR, is "This project will define Radio Resource Measurement enhancements to provide interfaces to higher layers for radio and network measurements." This does not include changes to regulatory classes

SuggestedRemedy

Delete the changes to AnnJ, and submit them to TGmb, or to a Task Group that includes regulatory matters in its scope.

Response *Response Status* **C**

REJECT.
802.11-2007 defines operation in Part 15 license-exempt bands for several PHYs, and this amendment enhances operation with means to specify radio measurements in those bands. To specify the radio channel for measurement, this amendment creates Regulatory Classes for Part 15 license-exempt bands, so that the combination of Regulatory Class and Channel Number uniquely specify channel measurement parameters e.g., channel bandwidth. 11k would be incomplete and incorrect without these changes.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **1155** 2/15/2008 4:00:03 PM

IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D9.** *SC* **11.10.11** *P* **143** *L* **10** # 1181

Engwer, Darwin Individual

Comment Type **ER** *Comment Status* **R**

Values of mib objects are typically not detailed in the operational clauses of the standard.

SuggestedRemedy

Move table 11-11 to the appropriate section of AnnD (or AnnQ as appropriate).

Response *Response Status* **C**

REJECT.
Since the dot11MeasurementPilotCapability requires a detailed description and the sub-clauses of 11.10.11 refer to the description while describing the Measurement Pilot generation procedure. Having the table in 11.10.11 makes it easier for the reader to understand the settings. In the interest of clarity, this description deviates from the norm.

Cl **11k-D9.** *SC* **11.10.3** *P* **127** *L* **35** # 1183

Engwer, Darwin Individual

Comment Type **TR** *Comment Status* **R**

The added text addresses the issue of measurement activity load on a STA that receives measurement requests, but does not adequately address the point raised in SB01-CID 230 (or LB78-CID-957).
The volume of measurement requests issued by a transmitting/ requesting station must be duty cycle limited in some way in order to avoid complete domination of the available network air time by measurement requests, especially in environments with hundreds or thousands of colocated STAs.

SuggestedRemedy

Add some mechanism to allow the duty cycle of measurements to be controlled wrt real data laden traffic.

Response *Response Status* **C**

REJECT.
The issue is not the % of wireless capacity or STA capacity used by radio measurements, it is to consider each STA's service load, power state and operating conditions. The AP has to consider traffic load and application requirements, regulatory requirements and specific measurement states from every STA in support of wireless network management. Guidelines and limits would have to consider regulatory requirements like 4 msec carrier sense and the detection of one microsecond radar pulses in Japan. There are no typical scenarios that describe 802.11 operation in all bands in most circumstances. Off-channel measurements are desireable to gather timely information about which channel to switch BSS operation to, and the noiser the operating environment, the more urgent the need for radio measurements off the serving channel. In any case, the STA can refuse any measurement request. We are unable to support a limit to measurements which precludes 'normal' 802.11 operation in a noisy environment, where collisions cause many retries.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **1183** 2/15/2008 4:00:03 PM

IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D12** *SC* **7.3.3** *P* **16** *L* **10** # 4001

Chaplin, Clint Individual

Comment Type **ER** *Comment Status* **R**

This sub-section should not be numbered 7.3.3; it needs to come before all the 7.3.2.xxx information element descriptions. And, unfortunately, you cannot make a single sub-section.

SuggestedRemedy

Renumber as 7.3.2.1, or something like that.

Response *Response Status* **C**

REJECT.
The referenced text is correct, but improperly placed in the TGk draft (D12.0). Prior to publication the publication editor shall move text at P16L9-L29 and insert this text at P73L25. Page and line references are in the clean draft (D12.0). Please note that the IEEE standards are edited professionally before publication.

Cl **11k-D12** *SC* **7.3.2.21.10** *P* **33** *L* **49** # 4002

Chaplin, Clint Individual

Comment Type **TR** *Comment Status* **R**

"The Sub-element ID field values for the defined optional sub-elements are shown in Table 7-29n. A Yes in the Extensible column of a sub-element listed in Table 7-29n indicates that the Length of the sub-element might be extended in future revisions or amendments of this standard. When the Extensible column of an element is set to Sub-elements, then the sub-element might be extended in future revisions or amendments of this standard by defining additional sub-elements within the sub-element. See 9.14.2." "Might be" or "can be"? Is this intended to be a warning, or a restriction on how the element might be extended? And why is a distinction being made between extending through simple data addition and through sub-elements? As far as the parser is concerned, it doesn't matter. Also, "When the Extensible column of an element is set to Sub-elements, then the sub-element might be extended in future revisions or amendments of this standard by defining additional sub-elements within the sub-element" will also extend the Length of the sub-element.

SuggestedRemedy

"The Sub-element ID field values for the defined optional sub-elements are shown in Table 7-29n. When the Extensible column of a sub-element is set to a value, then the sub-element might be extended in future revisions or amendments of this standard. If this value is "Yes", then this extension will be done by adding data onto the end of the sub-element; if this value is "Sub-elements", then the extension will be done by defining additional sub-elements within the sub-element. See 9.14.2."

Response *Response Status* **C**

REJECT.
We can see no technical difference in the proposed change to existing text. The simplified language and changing a period to a semi-colon we see as editorial. Consideration to this editorial item will be given by the editor prior to publication.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **4002** 2/15/2008 4:00:04 PM

IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D12** *SC* **Q** *P* **162** *L* **12** # 4003

Chaplin, Clint Individual

Comment Type **ER** *Comment Status* **R**

"Max Measurement Duration in TUs = 2<superscript>
(dot11RRMMaxMeasurementDuration - 4)</superscript> * BeaconInterval"
Looks like some sort of formatting directives became text

SuggestedRemedy

delete the extraneous text, and format correctly

Response *Response Status* **C**

REJECT.
The format in the draft text is defined in SNMP v2 as the correct way to indicate superscripting of characters.

Cl **11k-D12** *SC* **Q** *P* **162** *L* **21** # 4004

Chaplin, Clint Individual

Comment Type **ER** *Comment Status* **R**

"Non-OpMax Measurement Duration in TUs = 2<superscript>
(dot11RRMNonOperatingChannelMaxMeasurementDuration - 4) </superscript> *
BeaconInterval"
Looks like some sort of formatting directives became text

SuggestedRemedy

delete the extraneous text, and format correctly

Response *Response Status* **C**

REJECT.
The format in the draft text is defined in SNMP v2 as the correct way to indicate superscripting of characters.

Cl **11k-D12** *SC* **Q** *P* **181** *L* **47** # 4005

Chaplin, Clint Individual

Comment Type **TR** *Comment Status* **R**

"FALSE::= { dot11RRMRequestEntry 36 }" This is the only place where the attribute is explicitly set to FALSE. No other place is this done.

SuggestedRemedy

"::= { dot11RRMRequestEntry 36 }" to delete the FALSE

Response *Response Status* **C**

REJECT.
We deem this comment to be editorial. This editorial change and any other editorial MIB changes required for error free compilation will be made by the editor prior to publication.

Cl **11k-D12** *SC* **Q** *P* **181** *L* **47** # 5001

Chaplin, Clint Individual

Comment Type **TR** *Comment Status* **R**

This is in reference to my comment from the previous recirculation:
""FALSE::= { dot11RRMRequestEntry 36 }" This is the only place where the attribute is explicitly set to FALSE. No other place is this done."
with the suggested resolution of:
"::= { dot11RRMRequestEntry 36 }" to delete the FALSE
First of all, calling the comment "editorial" (as you recategorized it) or "technical" (my original categorization) doesn't change the way you are allowed to address the comment. Secondly, the IEEE may employ professional editors to clean up drafts before they are published, but those editors are not experts in the subject matter contained in the draft, and therefor cannot make the correct technical decision to fix a subject matter error: only the people in the ballot resolution committee are the subject experts. Asking a non-subject expert to fix a subject error in a draft is asking them to do a job they cannot do (in fact, perhaps one way to make the determination if a problem is technical or editorial is if a non-subject expert could correctly fix the problem or not). In this case, I mantain that a non-subject expert could not successfully correct this error, and thus it is technical, and should be fixed by the comment resolution committee in the draft during balloting.

SuggestedRemedy

Change "FALSE::= { dot11RRMRequestEntry 36 }" to "::= { dot11RRMRequestEntry 36 }"

Response *Response Status* **C**

REJECT.
This comment is not a new comment within the scope of this recirculation. This comment and the approved resolution will be forwarded to the SA editor for consideration prior to publication. The proposed change is entirely and exactly the work to be performed by the editor.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **5001** 2/15/2008 4:00:04 PM

IEEE P802.11k D12.0 Radio Ressource Measurement - Sponsor Ballot Dissapprove Voter Reject comments

Cl **11k-D12** *SC* **7.3.3** *P* **16** *L* **10** # 5002

Chaplin, Clint Individual

Comment Type **TR** *Comment Status* **R**

This is in reference to my comment from the previous recirculation:
This sub-section should not be numbered 7.3.3; it needs to come before all the 7.3.2.xxx information element descriptions. And, unfortunately, you cannot make a single sub-section.
with my proposed resolution:
Renumber as 7.3.2.1, or something like that.
And your rejection:
REJECT. The referenced text is correct, but improperly placed in the TGk draft (D12.0). Prior to publication the publication editor shall move text at P16L9-L29 and insert this text at P73L25. Page and line references are in the clean draft (D12.0). Please note that the IEEE standards are edited professionally before publication.
Your change that you suggest you will do strikes me as rather technical in nature, not editorial; moving text from one point in the draft to another point 57 pages later cannot be called editorial, and is probably a "substantive" change, and therefor needs to be balloted.

SuggestedRemedy

Move text currently located at P16L9-L29 and insert this text at P73L25.

Response *Response Status* **C**

REJECT.
This comment is not a new comment within the scope of this recirculation. This comment and the approved resolution will be forwarded to the SA editor for consideration prior to publication. The proposed change is entirely and exactly the work to be performed by the editor.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID # **5002** 2/15/2008 4:00:04 PM