# Introduction

This document summarises the timeline of the Dedicated Short Range Communications (DSRC) Tiger Team of the IEEE 802.11 Regulatory standing committee (REG SC).

Revision History:

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| Version | Description | Author |
| 2015-03-31 | Initial Version | Paul Nikolich |
| 2015-04-01 | Corrected dates | Paul Nikolich |
| 2015-04-01r0 | Converted to Word format | Adrian Stephens |
| 2015-04-01r1 | Added missing motions from word conversion | Adrian Stephens. |
| 2015-04-07r2 | Added edits from EC reflector (RKennedy, SShellhammer, JKenney) | Paul Nikolich |
| 2015-04-10r3 | Added item 7FEB2014 DSRC TT status update letter to FCC from 802 and editorial cleanup | Paul Nikolich |

# Timeline

## 25-Jan-13 NTIA 5 GHz Report

“Evaluation of the 5350-5470 MHz and 5850-5925 MHz Bands...,” available at <http://www.ntia.doc.gov/files/ntia/publications/ntia_5_ghz_report_01-25-2013.pdf>

## 20-Feb-13 FCC 13-22 NPRM 5 GHz Unlicensed Spectrum (UNII)

(aka ET Docket No. 13-49) <https://apps.fcc.gov/edocs_public/attachmatch/FCC-13-22A1.pdf>

## 08-Aug-13 802.11 Radio Regulatory Teleconference

Established ITS/DSRC Tiger Team, a subcommittee of the 802.11 Radio Regulatory Standing Committee.

From: <https://mentor.ieee.org/802.11/dcn/13/11-13-0935-01-0reg-august-1st-teleconference-plan-and-agenda.ppt> slide 8

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| * **What should be the outcome from the group?**   + Set of coexistence requirements for 802.11 in the 5 GHz band with ITS safety of life and property communications in the 5.9 GHz band   + Form a group to provide a formal interface to other organizations in the automotive industry, NHTSA, DOT and other ITS players * **What is the required milestone timeline**    + Dependent upon the FCC et al, progress on the rollout of the standards, technologies and laws   + Outcome of experiments prior to rulemaking; proof of concepts   + August 21, 2013 completion of project; data to follow   + CAMP/DOT testing and validating * **Who will lead the group?**    + Jim Lansford * **Meeting times and recurrence?** |

## 15-Aug-13 802.11 RR Teleconference

Confirms logistics of Tiger Team.

From <https://mentor.ieee.org/802.11/dcn/13/11-13-0963-01-0reg-august-15th-teleconference-plan-and-agenda.ppt> slide 9

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| **Tiger Team Status**   * **Weekly/Bi-weekly calls?**   + Fridays @ 1:00pm ET starting 8/23 * **First meeting to determine what we need to go forward and how often to meet** * **Jim will send notice to the Regulatory SC reflector** |

## 23-Aug-13 Initial 802.11 RR Tiger Team teleconference

From <https://mentor.ieee.org/802.11/dcn/13/11-13-0988-00-0reg-august-23rd-dsrc-coexistence-tiger-team-agenda.ppt> slide 6

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| **SC Operating Rules – Tiger Team**   * **Anybody can vote, present, and make motions** * **This is a tiger team – it is an ad hoc meeting of the 802.11 Regulatory Standing Committee**   + Any documents that are generated by this group that are intended for distribution outside of IEEE 802.11 (e.g., 802.18) must be ratified by the larger 802.11 Regulatory SC   + Voting on documents must occur at an interim or plenary meeting   + Only 802.11 voters may vote on documents to be ratified   + Any submissions to this group must be posted to the IEEE document server (Mentor) |

Slide 7

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| * **FCC allocated 75MHz of spectrum in the 5.9GHz band (5850-5925MHz) for Dedicated Short Range Communications (DSRC) in October 1999** * **In FCC NPRM 13-22 (13-49), the FCC proposed sharing the DSRC band, which would be UNII-4**   + DSRC would remain as a primary user of the band * **802.11ac could be modified to operate in this new UNII-4 band if approved by the FCC** * **FCC did not specify the framework or etiquette by which band sharing would occur** |

## Aug-13 to Mar-15 18.5 months of 802.11 RR Tiger Team meetings

## 07-Feb-14 802 DSRC Tiger Team status update letter to FCC from 802

https://mentor.ieee.org/802-ec/dcn/15/ec-15-0030-00-00EC-18-14-0007-02-dsrc-status-to-fcc.pdf

## Dec-14 to Mar-15 development of report

Drafts of the Tiger Team report were developed during this period.

These documents demonstrate that both the report and the voting results were developed through an open process. Poll questions were edited over several hours of Tiger Team teleconferences in December and January. Final report comments were resolved over several hours of Tiger Team teleconferences in February and March.

Date of posting of each revision of draft Tiger Team final report: DCN 11-14-1596 (doc)

revision 00 posted Dec. 12, 2014

revision 01 posted Jan. 30, 2015

revision 02 posted Feb. 20, 2015

revision 03 posted Mar 06, 2015

revision 04 posted Mar 09, 2015

Date of posting of clean Tiger Team final report: DCN 11-15-0347 (pdf)

March 09, 2015

Date of posting of each revision of consolidated comment spreadsheet: DCN 11-15-0175 (xls)

revision 00 posted Jan. 15, 2015

revision 01 posted Jan. 29, 2015

revision 02 posted Feb. 20, 2015

revision 03 posted Feb. 27, 2015

revision 04 posted Mar 06, 2015

revision 05 posted Mar 09, 2015

Comment resolution teleconference dates (60 to 90 minutes each):

Feb. 6, Feb. 20, Feb. 27 and March 6, 2015.

Tiger Team voting:

* Straw Poll final questions: posted Jan 30, 2015  
  <https://mentor.ieee.org/802.11/dcn/15/11-15-0240-00-0reg-dsrc-coex-tt-final-report-straw-poll-questions.ppt>
* Eligible voter list and Tiger Team attendance: posted Jan. 30, 2015  
  <https://mentor.ieee.org/802.11/dcn/15/11-15-0183-02-0reg-dsrc-coexistence-tt-attendance.xls>
* Online Survey Period: Feb. 9 to Feb. 23, 2015
* Overview of results: posted Feb. 27, 2015  
  <https://mentor.ieee.org/802.11/dcn/15/11-15-0288-00-0reg-overview-of-dsrc-coex-tt-straw-poll-results.ppt>
* Sorted comments: posted March 8, 2015  
  <https://mentor.ieee.org/802.11/dcn/15/11-15-0352-01-0reg-dsrc-tiger-team-straw-poll-comments-sorted.xlsx>

## 09-Mar-15 Final Report of DSRC Coexistence Tiger Team

<https://mentor.ieee.org/802.11/dcn/14/11-14-1596-04-0reg-final-report-of-dsrc-coexistence-tiger-team.docx>

## 10-Mar-15 802.11 Regulatory SC DSRC Coexistence Tiger Team Summary of activities sin JAN 2015 F2F

<https://mentor.ieee.org/802.11/dcn/15/11-15-0407-00-0reg-dsrc-tt-activities-jan-2015-mar-2015.ppt>

## 10-Mar-15 DSRC Band Sharing TT Status and Report Finalization

The following document was discussed in the REG SC (see next item for minutes).

<https://mentor.ieee.org/802.11/dcn/15/11-15-0402-02-0reg-dsrc-band-sharing-tt-status-and-report-finalization.pptx>

## 10-Mar-15 802.11 Regulatory SC meeting draft minutes MAR201

From the minutes of the Berlin REG SC session in:

<https://mentor.ieee.org/802.11/dcn/15/11-15-0293-01-0reg-berlin-meeting-minutes-march-2015.docx>

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| Chair reads slide 9 Tuesday AM2 Agenda, and asks for changes. Rolf de Vegt, Qualcomm has document 802.15/0402r1 that address many of the topics. The revised agenda is approved by unanimous consent.   * **DSRC Coexistence Tiger Team**   + Introduction   + Review the straw poll results   + Discuss The Report   + Rolf deVegt document 802.11-15/402r1   + Commissioners’ suggestion   + Letter to the FCC   + Motion to endorse The Report * **Any final thoughts?** * **Recess until Thursday**   Chair reads slide 10 DSRC Coexistence Tiger Team wrap-up  Final report in 11-15/347r0  Chair reads slide 12 is the proposals  Rolf de Vegt brings 15/0402r1 to the discussion. Rolf notes Tevfik Yucek led the efforts in Qualcomm.   * Background * Re-channelization proposal details (Qualcomm) * Detect-avoid proposal details (Cisco) * Regulatory Developments   + Blog post   + WiFi Innovation Act * IEEE802.11 Regulatory SC vote   John Kenney, Toyota Info, mentions that 802.11-14/1101r1 documents opinions about the 13/1449r2 proposal. Strawpoll. Text “Do you prefer:  A Re-channelization Proposal (13/1449) – Yucek 32  B Detect-and-Avoid Proposal (13/994) Ecclesine 7  C No preference 14  Do you prefer A 32, B 7 C 14, 69 in the room  Mark Emmelmann requests the discussion be minuted that “No preference” means multiple things, including “neither proposal”, “no preference among the proposals”, and “anything else.”  Marc Emmelmann (Self) Straw Poll,  Should 802.11 take a position favoring a specific technical solution for sharing the DSRC band?  Yes 32, No 20, Don’t care 6  Chair asks Jim Lansford, CSR, Chair of the DSRC Coexistence Tiger Team to review 802.11-15/407r0 and asks to approve the minutes from the March 6 minutes, Peter Ecclesine, moves, Stephen McCann Blackberry seconds, there is no discussion, the minutes are approved by unanimous consent.   * **Clean pdf version of final report**   + <https://mentor.ieee.org/802.11/dcn/15/11-15-0347-00-0reg-final-report-of-dsrc-coexistence-tiger-team-clean.pdf> * **Last redline of final report**   + <https://mentor.ieee.org/802.11/dcn/14/11-14-1596-04-0reg-final-report-of-dsrc-coexistence-tiger-team.docx> * **Last comment collection spreadsheet with CID resolution**   + <https://mentor.ieee.org/802.11/dcn/15/11-15-0175-05-0reg-dsrc-coex-tt-final-report-consolidated-comments.xls> * **Straw poll summary**   + <https://mentor.ieee.org/802.11/dcn/15/11-15-0288-00-0reg-overview-of-dsrc-coex-tt-straw-poll-results.ppt> * **Straw poll comments**   + <https://mentor.ieee.org/802.11/dcn/15/11-15-0352-01-0reg-dsrc-tiger-team-straw-poll-comments-sorted.xlsx>   Jim announces the Tiger Team is terminated now. Jim reviews slide 6 acknowledgements of Tiger Team contributors.  Rich Kennedy reviews slide 14 next steps, and will bring a personal motion to endorse the report to 802.11 WG Wednesday. Lots more discussion.  John Kenney suggested replacing “Ask the 802.11 WG to endorse the report” with “Do you support forwarding the report to the FCC?”  There was no motion taken in the REG SC on 802.11-15/347r0 Final Report of the DSRC Coexistence Tiger Team.  Chair recesses the meeting at 12:25 on March 10, 2015. |

Note the minutes shown above do not record the statement from the REG SC chair that he is not going to have the standing committee vote on approval of the Tiger Team Technical Report.

(That the REG SC chair made this statement is attested by S Shellhammer and A P Stephens, both present at the meeting and both 802 executive committee (EC) members).

## 11-Mar-15 802.11 WG raw unapproved minutes at which forwarding of DSRC report was discussed (11-15-0396r0)

These minutes will be published in 11-15/396r0, but were not published at the time of writing.

From the raw 802.11 working group minutes:

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| **28. DSRC report** (11-15-0294r0)  28.1. REG SC Chair: This document summaries the REG SC DSRC Tiger Team report.  28.2. **Believing that the report in document 11-15/0347r0 represents the work of the DSRC Coexistence Tiger Team, forward it to 802.18 for approval to send to the EC for its approval and submittal to the FCC.**  28.2.1 Moved by: Richard Kennedy, 2nd: Dick Roy  28.2.2 Chair: I would like to have limited debate on this issue.  28.2.3. C: I speak against the motion, from a procedural point of view as it is a personal motion and is not on behalf on the REG SC. There was a specific preference for one solution based on a straw poll in REG SC.  28.2.4. C: I speak for this motion. I think the document is a fair representation of the work done in the Tiger Team.  28.2.5. C: I speak against the motion. The document has not been approved by the REG SC. It will give the wrong impression coming out of IEEE 802.11  28.2.6. C: I speak in favour of this motion. I think we should continue to update the FCC on this issue. Indeed the tiger team was established to do this at the end of their work.  28.2.7. C: There was a lot of work done on this over the last 18 months and is a fair reflection of the work done.  28.2.8. C: I speak against the motion. The straw poll in REG SC was against doing this.  28.2.9. C: I speak against the motion. The report is biased towards the ITS community.  28.2.10. C: I speak against the motion. I’m concerned that the report gives an erroneous impression of the work within the REG SC.  28.2.11. C: I speak against the motion. The straw poll within REG SC was against doing this and is not beneficial to the WLAN community. It would be better to say that there was no agreement with the REG SC DSRC Tiger Team.  28.2.12. REG SC chair: I did not wish to have a motion in REG SC, as I wanted the whole of the IEEE 802.11 members to vote on this.  28.2.13. C: I speak against the motion. The work in the Tiger Team was admirable. However, there is a feeling among many people that this report is not a fair reflection for IEEE 802.11 members.  28.2.14. C: I speak in favour of the motion. This report does not state a position. It is a fair report of the work done by the Tiger Team.  28.2.15. C: I think this is calling the integrity of IEEE 802.11 into issue. Just because some people don’t like the report, shouldn’t stop this document going forward.  28.2.16. C: Staff from the FCC participated in this activity. However, I don’t think that all the initial promises within REG SC about this topic were not upheld.  28.2.17. C: I think procedures were followed. You should vote yes or no based on the technical content of the report.  28.2.18. C: I find that some of the data is missing from the report. I think IEEE 802.11 should correct this.  28.2.19. REG SC chair: from the start of the Tiger Team activity, I always wanted to bring the opinions of the DSRC and IEEE 802.11 communities to all of the IEEE 802.11 membership.  28.2.20. Chair: This is a procedural motion (50%), as the motion states that the document will go to IEEE 802.18.  28.2.21. For: 53, Against: 48, Abstain: 34 (Motion passes) |

Note the raw minutes above do not full record the words of the chair at 28.2.20, which are claimed to be: “This is a procedural motion (50%), as the motion states that the document will go to IEEE 802.18, since this will be a technical motion in 802.18 where 75% approval is required.”

(This is attested by S Shellhammer (802.19 chair) and A P Stephens (802.11 WG chair cited above)).

## 3/9.10.11.12/2015 802.18 TAG draft meeting minutes where DSRC was discussed

These minutes will be published as 18-15/19r0, but were not published at the time of writing.

From the raw minutes:

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| 3/9/15  13:30 Meeting called to order. In attendance: Lynch, Rich, Petere, Vijay,  Jeffries  AI 1 Notices  AI 2 Agenda  Moved – Rich, Seconded – Petere – vote 4/0/0 - Approved  AI 3 Matters from previous meetings – Minutes approved  Moved – Rich, Seconded – Petere (verify)  AI 4 Old business – None  AI 5 New Business  AI 5.1 (times to be assigned during PM1 Monday)  AI 5.3 Review of the recent FCC rules update (do the changes help?)  250 pages, members to review and report what may hurt 802  AI 5.4 Review the FAA’s drone rules. Does it impact 802? Consensus no  AI 5.5 DSRC report from 802.11 to the FCC (Rich Thursday)  3/10/15  AI 5.2 Review PARs for this Plenary: <http://www.ieee802.org/PARs.shtml>  3/11/15  Reviewed DSRC report presented by Petere. Moved to establish  09:00 on 3/12/15 and time limit of 1 hour for vote on the DSRC  Report. Moved – Petere, Seconded – Adrian – vote 6/0/1  Ballot(s) of the DSRC report.  The original motion presented to 802.18:  Believing that the report in document 11-15/0347r0 represents the work of the DSRC Coexistence Tiger Team forward it to the EC for its approval and submittal to the FCC.  Moved by: Apurva  Seconded by: Tim  Discussion?  Vote:  Motion to amend the original motion:  Amend the motion as shown in red.  Believing that the report in document 11-15/0347r0 represents the work of the DSRC Coexistence Tiger Team with the removal of Section 11and add to the front matter that there was no consensus, forward it to the EC for its approval and submittal to the FCC.  Moved by: Apurva  Seconded by: Tim  Discussion?  Vote: 7/1/1  The amended motion:  Believing that the report in document 11-15/0347r0 represents the work of the DSRC Coexistence Tiger Team with the removal of Section 11 and add to the front matter that there was no consensus, forward it to the EC for its approval and submittal to the FCC.  Moved by: Rich Kennedy  Seconded by: Petere  Discussion?  Vote: 8/1/2  Final 802.18 motion:  Approve document 18-15/0016r0 and forward it to the EC for its approval and submittal to the FCC.  Moved by: Rich Kennedy  Seconded by: Petere  Discussion?  Vote: 3-0-0 |

Note 1 - that during the 802.18 meeting where the document was edited and then approved, the edited version of 11-15/0347r0 was saved as 18-15/16r0. This is the document 802.18 approved.  
  
Note 2 - the minutes are missing that statement from the chair that this is a procedural motion, though several of us in the meeting stated that our opinion that this was a technical motion.

(Note 2 is attested by S Shellhammer and A P Stephens, both voting members of 802.18 and members of the 802 EC. As it turned out, this distinction was moot in the outcome of the vote.).

## 13-Mar-15 Closing EC meeting draft minutes

The following notes were taken from

<http://www.ieee802.org/minutes/2015_03/2015_0313_Close_Minutes_R0.pdf>

Page 20 onwards:

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| **7.071** | ME | Liaision DSRC Report to FCC (Doc #18-15-0015-02-0000) | **Lynch** | **15** | **02:12 PM** |

Cites <https://mentor.ieee.org/802.18/dcn/15/18-15-0015-02-0000-dsrc-coexistence-tiger-team-report.pptx> slide 12:

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| 802.18 Motion   * Believing that the report in document 11-15/0347r0 represents the work of the DSRC Coexistence Tiger Team with the removal of Section 11and add to the front matter that there was no consensus, forward it to the EC for its approval and submittal to the FCC. * Moved by: Rich Kennedy * Seconded by: Petere * Discussion? * Vote: 8/1/ |

*(Note an abstain count of 2 is present in the raw EC minutes, but not in the cited document).*

Cites: <https://mentor.ieee.org/802.18/dcn/15/18-15-0017-01-0000-ieee-802-march-2015-closing-report.pptx> slide 4

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| **EC Motion**   * The RR-TAG approved and is submitting to the EC for their approval one document describing the work done in the IEEE802.11 DSRC Tiger Team.   + Move to approve document 18-15/0016r1 providing a view of the work done in the IEEE802.11 DSRC Tiger Team with the cover letter as contained in Document 18-15/0018r0 and submit it to the FCC. The Chair of 802 is authorized to make editorial changes as necessary   + EC proposed: Lynch Second: Mody   + Vote: XX Yes XX No XX Abstain |

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| \* Motion #12 | The RR-TAG approved and is submitting to the EC for their approval one document describing the work done in the IEEE802.11 DSRC Tiger Team.  – Move to approve document 18-15/0016r1 providing a view of the work done in the IEEE802.11 DSRC Tiger Team with the cover letter as contained in Document 1815/0018r1 and submit it to the FCC. The Chair of 802 is authorized to make editorial changes as necessary |
| Moved | Lynch |
| Second | Mody |
| Results  Motion  Reference | See Item #7.071 |

After the presentation of the two slides, there were questions about the referenced documents. Vijay Auluck objected to being named 2nd on the 802.18 motion. Rich Kennedy attempted to clarify the situation, but challenges to the explanation resulted in additional confusion. After 15 minutes of discussion and further questions, additional time was needed to assemble accurate factual information for consideration by the EC.

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| \* Motion #13 | Motion to table Motion #12 |
| Moved | Law |
| Second | D’Ambrosia |
| Results | 12-0-0 |
| Motion | Passes |
| Reference | See Item #7.071 |

Time: Approximately 3:30pm

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| \* Motion #25 | Move to raise from the Table Motion #12. reference Item# 7.071 |
| Moved | Chair |
| Second  Results  Motion | No objections |
| Reference | See Item #5.033 |

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| **7.071** | ME | Liaision DSRC Report to FCC (Doc #18-15-0015-02-0000) | **Lynch** | **15** | **02:12 PM** |

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| \* Motion #12 | Move to approve document 18-15/0016r1 providing a view of the work done in the  IEEE802.11DSRC Tiger Team with the cover letter as contained in Document 18-15/0018r1 and submit it to the FCC. The Chair of 802 is authorized to make editorial changes as necessary. |
| Moved | Lynch |
| Second | Mody |
| Results Motion | Directed to Email Ballot by Chair |
| Reference | See Item #7.071 |

Challenges regarding the accuracy of the documents referenced in the revised motion continue. Shellhammer wished to amend the motion. Confusion continues, the 802 Chair directs Lynch to conduct an EC email ballot on the item with accurate background information. Upon reflection the Chair gives the instruction the EC ballot be conducted, if it fails, then Shellhammer may request the conduct of another EC email ballot to (hopefully) reach consensus.

## 31-Mar-15 Lynch and Mody are drafting text for an EC email ballot, in process