IEEE P802.11  
Wireless LANs

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| TGax Coexistence Assurance Document Comments | | | | |
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Abstract

Resolutions to comments on CA Doc.

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| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 16876 | 802.19 comment from Timothy Harrington: IEEE 802.15.4 HRP UWB and LRP UWB PHYs operate in the 6 GHz band. Coexistence has not been characterized or analyzed with respect to 802.15.4 HRP UWB and LRP UWB which use Impulse Radio (IR) modulation. Standard 2.4 GHz and 5 GHz standard CCA will not sense low power IR transmissions 6 GHz band as IEEE 802.15.4 UWB. Therefore co-existence must be tested and analyzed | Change to: "The traditional mechanisms for 802.11 devices to coexist with non-802.11 devices is clear channel assessment (CCA). However, traditional CCA techniques may not be adequate to sense UWB IR radios transmitting at -41.3 dBM. Analysis of sensing IR UWB transmissions at 6-7.125 GHz must performed." | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16877 | 802.19 comment from Timothy Harrington: Tests to determine whether UWB Impulse Radios, (both LRP and HRP as specified in 802.15.4), can be sensed have not been performed. The current values do not address sensing Impulse Radios. | Perform tests, analyze, and document results | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16878 | 802.19 comment from Timothy Harrington: Add analysis of LRP and HRP Impulse Radios 802.15.4 as both victim and interferer | Perform analysis multiple channel sizes referenced for 802.11ax as both victim and interferer for both LRP and HRP Impule Radios | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16879 | 802.19 comment from Timothy Harrington: Analysis of noise floor impact to low power -41.3 dBm devices IR radios at different distances were not performed | Analysis of noise floor impact to low power -41.3 dBm devices using 802.15.4 compliant devices with IR radios at different distances should be performed | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16880 | 802.19 comment from Timothy Harrington: 5.6 specifies that values for 5 GHz will be applied to 6 GHz - 7.125 GHz. There is no analysis of impact to LRP and HRP Impulse Radios that operate in this band in conformance to the IEEE 802.15.4 standard. | An analysis of Packet error rate or 802.11ax, and frame error rate or bit rate for LRP and HRP when used within the a several amounts of operational ranges would be useful | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16881 | 802.19 comment from Timothy Harrington: No analysis of 6 GHz is specified. Assuming that 5 GHz methodology will operate properly with 6 GHz Impulse Radios is not valid. | Analysis of the effects of 802.11ax CSMA on IR UWB. Must determine whether CSMA can sense HRP and LRP pulses? | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16882 | 802.19 comment from Timothy Harrington: Analysis of coexistence at the different 802.11ax channel widths with UWB is not provided | Perform analysis of the different bandwidths options affect UWB devices, and document results. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16883 | 802.19 comment from Timothy Harrington: No analysis of the effects at the center frequencies or extremes is provided for 802.15.4 6 GHz UWB IR Radios. | What are the effects at similar center frequencies, and at different frequencies for LRP, HRP, and 802.11ax?. What happens at the extremes? | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16884 | 802.19 comment from Stephen Palm: "The new amendment shall enable backward compatibility and coexistence with legacy IEEE 802.11 devices operating in the same band." Are they really legacy 802.11 devices in the 6 to 7.125 GHz band? | Clarify in which band " backward compatibility and coexistence" should occur | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  There is nothing in the amendment that prohibits "legacy operation" in the 6 GHz band. As such, the same backward compatibility and coexistence mechanisms used in 2.4 and 5 GHz apply to 6 GHz. |
| 16885 | 802.19 comment from Stephen Palm: Equation 28-134 and a value of 253 seems to channels to 7.205 compared to the earlier stated 7.125 GHz. Please clarify | Please clarify equation 28-134 or a limit less than 253 | Rejected  The equation merely provides channel numbering. Valid channels are indicated in Annex E, with the last channel being 233. |
| 16886 | 802.19 comment from Alaa Mourad: Add consideration of 802.15.4 HRP UWB and LRP UWB PHYs which both include channel definitions operating in 6 GHz band. Coexistence has not been characterized or analyzed with respect to impulse modulations in the same band. |  | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16887 | 802.19 comment from Benjamin Rolfe: In general, the CAD assumes that the coexistence characteristics of 802.11ax are "just like" legacy 802.11 OFDM, addressing only where new features would differ, which seemed reasonable. However with the expansion of channel plans into bands previously not specified, the 'just like' assumption is no longer true. There are other 802 services in the bands covered by the expanded scope which need to be considered and are not. | Expand the analysis to include specifically coexistence between 802.11ax and 802.15.4 UWB systems operating in the bands above 6 GHz. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16888 | 802.19 comment from Benjamin Rolfe: The CAD does not discuss coexistence in bands other than 2.4 GHz and 5 GHz, other than when describing the PAR scope. In Clause 2 it explicitly says "Therefore 802.11ax will be an enhancement to 802.11n in 2.4 GHz and 802.11ac in 5 GHz" but this is not consistent with the project scope as identified in clause 1. There are devices implementing 802.15.4 operating in the band above 6 GHz using the LRP and HRP UWN PHYs. The entire scope of 802.11ax is within the scope of the CAD, not just 2.4 GHz and 5 GHz operation. | Add analysis of coexistence with services based on 802.15.4 using the LRP and HRP UWB PHYs in all bands where 802.11ax and 802.15.4 UWB PHYs overlap. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16889 | 802.19 comment from Benjamin Rolfe: This paragraph is not consistent with the project scope for 802.11ax nor the current content of the draft. It is also inconsistent with clause 5.6 of this document. . | Remove first sentence after "7.125 GHz"; remove second sentence. Add a list of the bands in which 802.11ax will operate. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  Change "Though the PAR specifies the frequency range between 1 GHz and 7.125 GHz, the focus of 802.11ax is on the 2.4 GHz and the 5 GHz frequency bands. Therefore 802.11ax will be an enhancement to 802.11n in 2.4 GHz and 802.11ac in 5 GHz." to "Though the PAR specifies the frequency range between 1 GHz and 7.125 GHz, 802.11ax is an enhancement to 802.11n in 2.4 GHz and 802.11ac in 5 GHz frequency bands and an extension into the 6 GHz band." Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16890 | 802.19 comment from Benjamin Rolfe: This paragraph describes CCA as "The mechanism" for coexistence with other 802 wireless systems other than legacy 802.11, but does not provide any analysis of the effect of CCA on mitigating interference. | Provide technical analysis of how the 802.11ax signals will perform with respect to other 802 wireless services in the same bands of operation both potential impact of 802.11ax as "assailant" and as "victim" The CAD should characterize the performance of each system (e.g. packet loss, latency) and include all 802 systems operating in the same bands. Where the expected performance and impacts are "just like" analysis done for previous standards, reference CAD documents as appropriate. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16891 | 802.19 comment from Benjamin Rolfe: Of particular interest is coexistence impacts in the 6 GHz band, where previously 802.11 has not operated and previous coexistence analysis has not covered. The 802.15.4 LRP and HRP UWB PHYs operate in this band. Include analysis of the impacts of these services on 802.11ax (likely none) and the impacts of 802.11ax on these services. In particular, the only mitigation method given, CCA, a reasonable question is will the current CCA mechanisms detect UWB signals (which seems likely not), and analysis including expected performance impacts (PER, latency, etc.) as well as mitigation factors and techniques other than CCA and CSMA which may apply. | Complete analysis as described in the comment | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16892 | 802.19 comment from Benjamin Rolfe: The current 802.11ax draft reference [1] defines multiple channels in the bands above 6 GHz overlapping 802.15.4 UWB; operation in different channels will have different impacts. A discussion of performance in different channels is useful in illustrating potential mitigation techniques, such as provisioning decisions. | Analyze and describe impacts of each channelization especially above 6 GHz. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16893 | 802.19 comment from Benjamin Rolfe: The 802.11ax draft includes channel definitions in particular above 6 GHz which are based on rules not yet formulated. Existing 802.15.4 based systems operate under existing rules between 6 as 10 GHz, allowed because of the very low PSD. Rulemaking opening up license exempt operation at higher power levels than authorized under current rules in the band may allow 802.15.4 UWB based systems to operate at higher PSD than currently allowed. Such systems may have a significant impact on the 802.11ax victim. This seems like a useful scenario to include in the CAD analysis. | Include analysis of impacts of 802.11ax and 802.15.4 UWB systems operating at similar power limits, e.g. with both operating at current allowed limits and both operating at expected limits. Include analysis of each system as victim and assailant. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16894 | 802.19 comment from Benjamin Rolfe: It is useful to note that this feature may result in substantially higher aggregate energy, which would be expected to have a different coexistence implication than prior 802.11 systems without this feature. Since this is clearly not "just like it's always been", quantified performance impacts and vulnerabilities seem appropriate. | Complete analysis, providing impacts as victim and assailant, of this feature. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16895 | 802.19 comment from Benjamin Rolfe: It would be helpful to know how the expected magnitude of interference floor increase. | Provide the expected increase. E.g. expected level at various distances from contributing devices relative to the receiver. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16896 | 802.19 comment from Benjamin Rolfe: Clearly a larger BSS sphere of influence will potentially expand the number of potential assailant and victim devices as stated. Longer duration of the preamble will also increase interference footprint (both as assailant and victim) in an interference limited environment. What is the magnitude of this effect on coexistence? Also, what about bands other than 2.4 GHz? | Include consideration of the impact of longer duration packets. Include consideration of other bands covered by the amendment. | Rejected  Duration of 11ax packets are comparable to legacy formats. |
| 16897 | 802.19 comment from Billy Verso: The 802.11ax CAD does not consider that 802.15 UWB deployments are active in the 6 to 7 GHz band and likely to be severly affected victims of any inband 802.11ax transmitters that are within a line-of-sight range of a few hundred metres. (Ref doc 19-18-0017-00-0000). | 802.11ax should consider how it coexists with 802.15 UWB in this band and modify 11ax accordingly. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16898 | 802.19 comment from Billy Verso: While the PAR may be correctly repoduced here, why does it not read "The new amendment shall enable backward compatibility with legacy IEEE 802.11 devices and coexistence with legacy IEEE 802 devices operating in the same band." | Can the PAR be changed to include coexistence with legacy 802.11 and 802.15 devices. | Rejected  The comment proposes a PAR modification; while the COEX document quotes the PAR, the PAR is not the balloted document, and a modification to the coexistence document does not modify the PAR. |
| 16899 | 802.19 comment from Billy Verso: This text acknowledges the encroachment into the 6 to 7 GHz band but says the work is focused on 2.5 and 5 GHz bands. Clearly this is a mistake as far as coexistance is concerned, where both 802.15.4 HRP UWB PHYs and LRP UWB PHYs operate in the 6 to 7 GHz band. | Properlty consider workable coexistance with these 802.15 UWB deployments or remove 6 to 7 GHz operation from 11ax to only focus on bands currently allowed by FCC. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16900 | 802.19 comment from Billy Verso: In general this clause is considering only devices in 2.5 GHz and 5 GHz bands, and is not considering the 802.15.4 HRP UWB PHY and LRP UWB PHY operating in the 6 to 7 GHz band. | Include coexistance mechanisms for these 802.15 UWB deployments or remove the channels from 11ax that cover 6 to 7 GHz band. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16901 | 802.19 comment from Billy Verso: I expect 802.11's normal CCA mechanisms will not work with 802.15 UWB modulations, which have a TX power density is -41.3 dBm/MHz and messages that are typically only a few hundred microseconds in duration. | 802.11ax will need to consider other coexistance mechanisms | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16902 | 802.19 comment from Billy Verso: In this clause are lots of techniques to make very high density of use of the band, which is good for 2.4 and 5GHz bands where CCA is an effectrive coexistance mechanism. However if this is translated into the 6 to 7 GHz band, I fear that any coexisting systems using 802.15.4 HRP UWB or LRP UWB PHYs will cease to operate effectively. This is worrying because these systems are critical in applications such as: robot guidance, factory automation, hospital security/safety, automotive keyless entry, safety of personnel around machines, first responder location etc. | Include coexistance mechanisms for these 802.15 UWB deployments or remove the channels from the 11ax amendment that cover 6 to 7 GHz band. | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16903 | 802.19 comment from Billy Verso: Here is operation in the 6 GHz band with lots of channels..... see my general commenrt on section 5, and worries expressed | Include coexistance mechanisms that ensure 11ax will not disrupt systems based on 802.15.4 UWB PHYs | Rejected  This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16904 | 802.19 comment from Robert Heile: I am supporting Ben Rolfe's comments on this ----------------------------------- Hello 802.19 voters: The 802.11ax is currently out for ballot, following updates based on the project scope change. I've reviewed it and submitted comments. With the change in project scope to include bands above 6 GHz, the CAD no longer meets the requirements stated in the IEEE 802 LMSC Operations Manual (clause 12) "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation." 802.15.4 defines wireless licensed exempt operation in the 6 to 10 GHz range (HRP and LRP UWB PHYs). The updates to the CAD have not address the impacts with 802.15.4 UWB based services.   Thus I am asking for a vote to disapprove the CAD and ask 802.11 WG to update it to meet the LMSC requirements.A I have submitted comments to assist the 802.11 WG in completing the CAD.A Below is a summary of the issues I've identified in submitted comments for those who are interested.   Thank you for your consideration. Best Regards Benjamin Rolfe (affiliation: Blind Creek Associates, UWB Alliance)   ===A details === Summary of comments on the 802.11ax Coexistence Assurance Document (B. Rolfe) - CAD assumes that the coexistence characteristics of 802.11ax are the same as legacy 802.11 OFDM,A addressing only where new features would differ, however with the expansion of the channel plans into bands previously not specified, the 'just like' assumption is no longer true.A The move into 6 GHz to 10 GHz is new. - The CAD does not discuss coexistence considerations in other than the 2.4 GHz and 5 GHz bands.A In Clause 2 it explicitly says "Therefore 802.11ax will be an enhancement to 802.11n in 2.4 GHz and 802.11ac in 5 GHz" which was accurate with the original project scope but is not with the current project scope. - I am asking that the CAD include analysis of coexistence with services based onA 802.15.4 using the LRP and HRP UWB PHYs in all bands where 802.11ax and 802.15.4 UWB PHYs overlap. - The CAD states that CCA (and CSMA) are the primary coexistence mechanisms in 802.11. It does not describe how CCA will (or will not) work with services based onA 802.15.4 using the LRP and HRP UWB PHYs. I am asking that analysis is provided on CCA as a coexistence mechanism with UWB systems. - I am aware that there has been considerable work done by 802.11 WG members on coexistence with 3GPP.A None of this good work is used or referenced in the CAD; This would be good content for the CAD. Note the LMSC Operations Manual says "The WG should consider other specifications in their identified target band(s) in the CA document", and the work on coexistence with LTE based services would fall under this recommendation. |  | This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |
| 16905 | 802.19 comment from Jay Holcomb: Per the IEEE Operations Manual, v21, section 13 includes, ... The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document. I do no see in the CAD any reference to already approved non-IEEE 802.11 standards and the coexistance with them. | Document what the affects are to IEEE 802.15.4 HRP and LRP UWB communications with an 802.11ax signal present, and vica-versa. At least worse case. | This is not a comment on the draft amendment, however with respect to the CA document:  The IEEE 802 LMSC OPERATIONS MANUAL states as follows "The CA document shall address coexistence with all relevant approved IEEE 802 LMSC wireless standards specifying devices for unlicensed operation. The WG should consider other specifications in their identified target band(s) in the CA document."  802.11 coexistence with non-802.11 systems is addressed in Section 3 of the CA document. There is no LMSC requirement for analysis or simulation or testing.  CA document has been amended to acknowledge UWB with the relevant regulations. Refer to https://mentor.ieee.org/802.11/dcn/16/11-16-1348-04-00ax-coexistence-assurance.docx |