IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| LC channel numbering | | | | |
| Date: 2022-07-15 | | | | |
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|  |  |  |  |  |

Abstract

Comment resolution for TGbb D3.0

# Revision History

R0: initial revision

R1: Based on comments from Allert van Zelst, updated supported channel number range and changed Table E-x column headings.

R2: Remove bracketed text after “channel number” and “channel center frequency index”

# Comments

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | Robert Stacey | The channel numbering description could be improved | Technical | 15 | 3.1 | 6 | Insert a column in Table E-1, etc. with heading "LC IF starting frequency (MHz)" after "Channel spacing". For rows with "Applicable to LC" in column "Behaviour limits set" and "5" in column "Channel starting frequency", add "-154". For rows with "Applicable to LC" in column "Behaviour limits set" and "5.950" in column Channel starting frequency", add "181". For other rows add '-'.  Remove the channel number mapping from 32.3.4 since the parameters for Equation 32-1 are now fully defined in Table E-1.  I can provide a more detailed proposal if needed. |

## Discussion

Email from Allert van Zelst:

Hi Robert,

Thanks for your proposal on the TGbb channelization. I can appreciate the direction, but I have a few questions about the details: can you perhaps explain why you let n\_ch now run till 233? I don’t think that maps to the table in 22/1088r3? There, for 5 GHz, the highest channel number is 64, and for 6 GHz it is 29. Is your intend to extend these? For instance, when we look at your table E-4, operating classes 128 – 130, do you want to accept the channels with channel center frequency index up to 171? The LC IF channel center frequency for this would be -154 + 5\*171 = 701 MHz. Similarly for 6 GHz, e.g., operating class 131, the highest channel center frequency index is 233. This would correspond to an LC IF channel center frequency 181 + 5\*233 = 1346 MHz. Is that the intend?

One small comment: in your table E-4, for consistency, I propose to change “LC IF starting frequency (MHz)” to “LC IF channel starting frequency (MHz)”

Thanks,

Allert

Second email…

Thanks Robert,

This looks almost fine to me. There is one thing that I overlooked yesterday. It is with respect to the sentence:

nch = 1,…, 64 is the channel number (for 20 MHz channel width) or channel center frequency index (for 40 MHz, 80 MHz, 80+80 MHz or 160 MHz channel width)

I think it should be changed to:

nch = 1,…, 64 is the channel number (for 20 and 40 MHz channel width) or channel center frequency index (for 80 MHz, 80+80 MHz or 160 MHz channel width)

Namely, for 20 MHz channel width this is how table E-4 specifies it. And the 40 MHz channel width is a special case; see 19.3.15.4 40 MHz channelization. Operating class 132 is a bit confusing, though. It is 40 MHz, but it doesn’t have PrimaryChannelLowerBehavior or PrimaryChannelUpperBehavior. Perhaps that is an error overlooked in 11ax.

Thanks,

Allert

# Proposed resolution

REVISED

Agree in principle.

TGbb editor to implement the changes under “Editing instructions” in 22/1589r1.

# Editing instructions

**32.3.4 Channel numbering**

***TGbb editor: Change as follows:***

In systems using light communications, the frequency segment refers to the LC IF signal.

LC IF channel center frequencies are defined at every integer multiple of 5 MHz above the LC IF channel  
starting frequency. The relationship between LC IF channel center frequency and channel number nch is given  
in Equation (32-1)

LC IF channel center frequency = LC IF channel starting frequency + 5 x nch (MHz), (32-1)

where

nch = 1,…, 64 is the channel number or channel center frequency index

LC IF channel starting frequency is defined in Annex E

Equation 32-1 and the LC IF channel starting frequencies defined in Annex E divide the LC IF spectrum into two segments: frequencies in the range 16 MHz – 176 MHz that map from the 5 GHz band and frequencies in the range 176 MHz – 336 MHz that map from the 6 GHz band as shown in Figure 32-4 (Channel mapping from 5 GHz and 6 GHz RF to LC IF).

A channel number or channel center frequency index from the 5 GHz band shall not be greater than 64. A channel number or center frequency index from the 6 GHz band shall not be greater than 29.

**TGbb editor: Insert Figure 32-4 from 22/1088r3 here**

NOTE—The 80 MHz LC IF channels specify the maximum bandwidth of one IF frequency segment in the  
80+80 MHz channel configuration.

An LC AP shall communicate the operating class, band (5 GHz or 6 GHz), channel width, and channel  
number

**Annex E**

**E.1 Country information and operating classes**

***TGbb editor: Change Table E-1 as follows: insert a new column “LC IF channel starting frequency” after the column “Channel spacing (MHz)”; Add “-154” to the cells in the new column for rows 1, 2, 22, 23, 27, 28, 128, 129.***

***TGbb editor: Change Table E-2 as follows: insert a new column “LC IF channel starting frequency” after the column “Channel spacing (MHz)”; Add “-154” to the cells in the new column for rows 1, 2, 5, 6, 8, 9, 128, 129, 130.***

***TGbb editor: Change Table E-3 as follows: insert a new column “LC IF channel starting frequency” after the column “Channel spacing (MHz)”; Add “-154” to the cells in the new column for rows 1, 32, 33, 36, 37, 41, 42, 128, 129, 130, 133, 134, 135.***

***TGbb editor: Change Table E-4 as follows:***

[Note there is an editing error in the draft for row 130: “Channel set” is empty and “Channel center frequency index” has the number list]

Table E-4 --- Global operating classes

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Operating class** | **Nonglobal operating class(es)** | **Channel starting frequency (GHz)** | **Channel spacing (MHz)** | **LC IF channel starting frequency (MHz)** | **Channel set** | **Channel center frequency index** | **Behavior limits set** |
| 115 | E-1-1,  E-2-1,  E-3-1,  E-6-1 | 5 | 20 | -154 | 36, 40, 44, 48 | - | UseEirpForVHTTxPowEnv  Applicable to LC |
| 116 | E-1-22,  E-2-5,  E-3-36,  E-6-4 | 5 | 40 | -154 | 36, 44 |  | PrimaryChannelLowerBeha  vior,  UseEirpForVHTTxPowEnv  , Applicable to LC |
| 117 | E-1-27,  E-2-8,  E-3-41 | 5 | 40 | -154 | 40, 48 |  | PrimaryChannelUpperBeha  vior,  UseEirpForVHTTxPowEnv  , Applicable to LC |
| 118 | E-1-2,  E-2-2,  E-3-32,33,  E-6-2 | 5 | 20 | -154 | 52, 56, 60, 64 |  | DFS\_50\_100\_Behavior,  UseEirpForVHTTxPowEnv  , Applicable to LC |
| 128 | E-1-128, E-  2-128, E-3-  128, E-6-  128 | 5 | 80 | -154 |  | 42, 58,  106, 122, 138, 155, 171 | UseEirpForVHTTxPowEnv  , Applicable to LC |
| 129 | E-1-129, E-  2-129, E-3-  129, E-6-  129 | 5 | 160 | -154 |  | 50, 114,  163 | UseEirpForVHTTxPowEnv  , Applicable to LC |
| 130 | E-1-130, E-  2-130, E-3-  130, E-6-  130 | 5 | 80 | -154 |  | 42, 58,  106, 122,  138, 155,  171 | 80+,  UseEirpForVHTTxPowEnv  , Applicable to LC |
| 131 |  | 5.950 | 20 | 181 | 1, 5, 9, 13, 17, 21, 25,  29, 33, 37, 41, 45, 49,  53, 57, 61, 65, 69, 73,  77, 81, 85, 89, 93, 97,  101, 105,  109, 113,  117, 121,  125, 129,  133, 137,  141, 145,  149, 153,  157, 161,  165, 169,  173, 177,  181, 185,  189, 193,  197, 201,  205, 209,  213, 217,  221, 225,  229, 233 | - | Applicable to LC |
| 132 |  | 5.950 | 40 | 181 | - | 3, 11, 19, 27, 35, 43, 51, 59, 67, 75, 83, 91, 99, 107, 115, 123, 131, 139, 147, 155, 163, 171, 179, 187, 195, 203, 211, 219, 227 | Applicable to LC |
| 133 |  | 5.950 | 80 | 181 | - | 7, 23, 39,  55, 71, 87,  103, 119,  135, 151,  167, 183,  199, 215 | Applicable to LC |
| 134 |  | 5.950 | 160 | 181 |  | 15, 47, 79,  111, 143,  175, 207 | Applicable to LC |
| 135 |  | 5.950 | 80 | 181 |  | 7, 23, 39, 55,  71, 87, 103,  119, 135,  151, 167,  183, 199,  215 | 80+  Applicable to LC |
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**References:**