IEEE P802.11  
Wireless LANs

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| LB272-DMG-CIDs-Earth-Coordinates | | | | |
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Abstract

This document proposes resolution to several LB272 DMG CIDs related to Earth Coordinates in DMG Sensing.

The changes are relative to IEEE P802.11-REVme/D1.0, December 2021

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| **CID** | **Section** | **Page**  **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1306 | 9.4.2.323 | P120  L58 | When the Earth Coordinates subfield of the DMG Sensing Short Capabilities element is set to 1, it indicates that the STA is capable of sending azimuth and elevation in earth  coordinates. However, a STA may be able to use two different kinds of coordinates at the same time. In this case, the coordinates of the Beam Azimuth and Beam Elevation subfields are not clear. | Modify the defination of the Earth Coordinates subfield of the DMG Sensing Short Capabilities element. Or, add a new subfield into the DMG Sensing Beam Descriptor element to indicate the coordinates. | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1307 | 9.4.2.332 | P140  L50 | When the Earth Coordinates subfield of the DMG Sensing Short Capabilities element is set to 1, it indicates that the STA is capable of sending azimuth and elevation in earth  coordinates. However, a STA may be able to use two different kinds of coordinates at the same time. In this case, the coordinates of the Sector Azimuth and Sector Elevation subfields are not clear. | Modify the defination of the Earth Coordinates subfield of the DMG Sensing Short Capabilities element. Or, add a new subfield into the DMG Beacon Sector Descriptor element to indicate the coordinates. | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1308 | 9.4.2.324 | P121  L63 | A STA capable of using earth coordinates may also send azimuth and elevation in an arbitrary STA's coordinate system. | change the defination of the value 1 of the Earth Coordinates subfield to that the STA is only capable of sending azimuth and elevation in earth coordinates. | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1309 | 9.4.2.325 | P124  L01 | When the Earth Coordinates subfield of the DMG Sensing Short Capabilities element is set to 1, it indicates that the STA is capable of sending azimuth and elevation in earth  coordinates. However, a STA may be able to use two different kinds of coordinates at the same time. In this case, the coordinates of the Azimuth subfield is not clear. | Add a new subfield into the DMG Sensing Measurement Setup element to indicate the coordinates. Or, make a specific coordinates as mandatory. | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1310 | 9.4.2.325 | P124  L05 | When the Earth Coordinates subfield of the DMG Sensing Short Capabilities element is set to 1, it indicates that the STA is capable of sending azimuth and elevation in earth  coordinates. However, a STA may be able to use two different kinds of coordinates at the same time. In this case, the coordinates of the Elevation subfield is not clear. | Add a new subfield into the DMG Sensing Measurement Setup element to indicate the coordinates. Or, make a specific coordinates as mandatory. | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1324 | 9.4.2.323 | P120L58 | The Tx and Rx beam descriptors provide AZ and EL in deg, but without any reference. | Link the text here to bit "Earth Coordinates" in 9.04.2.324 (Figure 9-1002bk) | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |
| 1325 | 9.4.2.325 | P124  L01 | The Azimuth and Elevation subfield in "Figure 9-1002bn--Peer Orientation field format" are generic and it is not clear what is the coordnation system. | I suggest to link the text here to bit "Earth Coordinates" in 9.04.2.324 (Figure 9-1002bk) | Revised: TGbf Editor make changes as in:  https://mentor.ieee.org/802.11/dcn/23/ 11-23-0506-00-00bf-lb272-dmg-cids-earth-coordinates.docx |

**Discussion:**

The commenters are pointing to the fact that the reporting method is not clear when the STA is capable of earth coordinates.

Since the STA can report using an arbitrary coordinate system (when not using the earth coordinates), it includes the earth coordinates. This means that for simplicity we can define that the STA (capable of reporting earth coordinates) shall always use the earth coordinates.

The commenter specifies two solution options. The one mentioned in 1308 is the same as above. We select this as the resolution for all of the set.

[1307]

*TGbf Editor: Please add the text at P215L46 in subclause 11.55.3.10 in D1.0 as follows.*A STA requests information about DMG Beacon frame transmission from a PCP/AP by sending an Information Request frame with the Element ID of the DMG Passive Sensing Beacon Information element in the Request Element field. The PCP/AP responds with an Information Report frame that includes a DMG Passive Sensing Beacon Information element and one or more DMG Beacon Sector Descriptor elements (see 9.4.2.332 (DMG Beacon Sector Descriptor element)). The Sector Azimuth, Sector Elevation, Azimuth Beamwidth and Elevation Beamwidth fields in Sector Descriptors field in DMG Beacon Sector Descriptor element shall be reported in earth coordinates if the Earth Coordinates subfield in Short DMG Sensing Capabilities field is set to 1 and in an arbitrary STA’s coordinate system if the Earth Coordinates field is set to 0.

[1308]

## *TGbf Editor: Please modify the text at P121L63 in subclause 9.4.2.324 in D1.0 as follows.*

~~The Earth Coordinates subfield indicates that the STA is capable of sending azimuth and elevation in earth coordinates (azimuth zero is north, elevation zero is horizon). If it is set to zero, azimuth and elevation are relative to an arbitrary STA’s coordinate system.~~

The Earth Coordinates subfield specifies the coordinates used for azimuth and elevation. When earth coordinates (azimuth zero is north, elevation zero is horizon) are used then Earth Coordinates subfield is set to 1. When an arbitrary STA’s coordinates are used then Earth Coordinates subfield is set to 0.

[1309, 1310 & 1325]

The commenters are correct; however, the issue is behavioral, hence the fix is in section 11.55.3.4 DMG sensing measurement setup:

## *TGbf Editor: Please add the text at P200L19 in subclause 11.55.3.4 in D1.0 as follows.*

The azimuth and elevation fields in Peer Orientation field in the Measurement Setup Control field shall be reported in earth coordinates if the Earth Coordinates subfield in Short DMG Sensing Capabilities field equals to 1 and in an arbitrary STA’s coordinate system if the Earth Coordinates field equals to 0.

[1306 & 1324]

The commenter is correct; however, the issue is behavioral, hence the fix is in section 11.55.3.3 DMG sensing session setup:

## *TGbf Editor: Please add the text at P198L27 in subclause 11.55.3.3 in D1.0 as follows.*

Beam Azimuth, Beam Elevation, Azimuth Beamwidth and Elevation Beamwidth fields in the Beam Descriptor field shall be reported in earth coordinates if the Earth Coordinates subfield in Short DMG Sensing Capabilities field equals to 1 and in an arbitrary STA’s coordinate system if the Earth Coordinates field equals to 0.