IEEE P802.11
Wireless LANs

|  |
| --- |
| LB239 Comment Resolution |
| Date: 2019-03-08 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Claudio da Silva | Intel |  |  | claudio.da.silva@intel.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions to comments submitted in LB239. The text used as reference is D3.0.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4461 | 10.43.10.5.2.2.2 | 312.00 | "The BRP-TXSS may consists up to 6 phasesPhase 1: Set up (mandatory)Phase 2: Initiator BRP TXSS (mandatory)Phase 3: Receive training phase of the responderPhase 4: Responder BRP TXSSPhase 5: Receive training phase of the initiatorPhase 6: Ack (mandatory)Phase 3, 4 and 5 may be included depending on if the procedure is for SISO, MIMO and reciprocity. However, it is still not clear to which of these phases are required by the SISO BRP-TXSS when the initiator and responder has some form of reciprocity. The descriptions in Section 10.43.10.5.2.2.2 Reciprocity and SISO BRP TXSS configuration attempts to clarify but it was very difficult to read and understand." | "Provide a table to clarlyl what phase can be skipped or none of the phase can be skipped, when different reciprociy applies to Intiatior and Responder.E.g. see table below" |
| 4462 | 10.43.10.5.2.2.2 | 312.00 | "It is mentioned in section 10.43.10.5.2.2.2 (page 312 line 10-11) that Responder BRP-TXSS phase shall be skipped if responder is antenna pattern reciprocal. For all other cases, Responder BRP-TXSS phase shall be included.However, on page 312 line 35, ""If the initiator is DMG antenna reciprocal and the SISO BRP TXSS includes a Responder BRP TXSS: "" on page 284, line 28. ""If the initiator is not antenna pattern reciprocal and is not DMG antenna reciprocal, and the SISO BRP TXSS includes a Responder BRP TXSS""Both above statement contradicts will the early statement" | "Provide a table to clarlyl what phase can be skipped or none of the phase can be skipped, when different reciprociy applies to Intiatior and Responder.E.g. see table below" |

**Proposed resolution**: Revised

**Modifications:** *Please modify the paragraph in lines 10 and 11 of page 312 as follows:*

~~A SISO BRP TXSS shall not include a Responder BRP TXSS if the responder is antenna pattern reciprocal. A SISO BRP TXSS procedure shall include a Responder BRP TXSS in all other cases.~~ As discussed in 10.43.10.5.2, Responder BRP TXSS and receive training for initiator are included in a SISO BRP TXSS depending on reciprocity characteristics of the initiator and responder. Specifically, each of these two phases shall or shall not be included in a SISO BRP TXSS as defined in Table XXX.

**Table XXX —Definition of whether Responder BRP TXSS and receive training for initiator are included in a SISO BRP TXSS. “Yes” defines that the phase shall be included, and “No” defines that the phase shall not be included.**

|  |  |  |  |
| --- | --- | --- | --- |
| Initiator | Responder | Phase: Responder BRP TXSS | Phase: Receive training for initiator |
| antenna pattern reciprocal | antenna pattern reciprocal | No | No |
| antenna pattern reciprocal | DMG antenna reciprocal | Yes | No |
| antenna pattern reciprocal | not antenna pattern reciprocal and not DMG antenna reciprocal | Yes | Yes |
| DMG antenna reciprocal | antenna pattern reciprocal | No | Yes |
| DMG antenna reciprocal | DMG antenna reciprocal | Yes | Yes |
| DMG antenna reciprocal | not antenna pattern reciprocal and not DMG antenna reciprocal | Yes | Yes |
| not antenna pattern reciprocal and not DMG antenna reciprocal | antenna pattern reciprocal | No | Yes |
| not antenna pattern reciprocal and not DMG antenna reciprocal | DMG antenna reciprocal | Yes | Yes |
| not antenna pattern reciprocal and not DMG antenna reciprocal | not antenna pattern reciprocal and not DMG antenna reciprocal | Yes | Yes |

*Please add the following paragraph after Table XX:*

If a SISO BRP TXSS includes receive training for initiator, the L-RX field in the EDMG BRP Request element or EDMG BRP field within the BRP frame sent by the initiator to start the BRP TXSS shall be set to a value greater than 0. If a SISO BRP TXSS does not include receive training for initiator, the L-RX field in the EDMG BRP Request element or EDMG BRP field within the BRP frame sent by the initiator to start the BRP TXSS shall be set to 0.

*Please delete the following lines:*

* *Lines 15-16 in page 312*
* *Lines 27-28 in page 312*
* *Lines 38-39 in page 312*
* *Lines 11-12 in page 313*
* *Lines 16-24 (three paragraphs) in page 313*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4109 | 10.43.10.5.2.2.1 | 308.34 | Throught 10.43.10.5 there are multiple references to fields of the EDMG-A-Header, as this is a MAC clause, these should all be replaced with references to PHY Service interface | Repalce e.g. "TRN-Unit RX Pattern field in the EDMG-Header-A shall be set to 1" with TRN-RX\_PATTEN shall be set to QUASI\_OMNI" |

**Proposed resolution**: Revised

**Modifications:** *Please make the following changes:*

* Line 34 (page 308), line 26 (page 316), line 13 (page 317): Replace “The TRN-Unit RX Pattern field in the EDMG-Header-A shall be set to 1” with “The TRN\_RX\_PATTERN parameter within the TXVECTOR of the PPDUs shall be set to QUASI\_OMNI.”
* Lines 14-16 (page 309): Replace “The value of the TRN-Unit RX Pattern field in the EDMG-Header-A shall be set according to the Antenna Pattern Reciprocity and the DMG Antenna Reciprocity subfields within the DMG STA Capability Information field of both initiator and responder, as defined in 10.43.10.5.2.2.2;” with “The value of the TRN\_RX\_PATTERN parameter within the TXVECTOR shall be set according to the Antenna Pattern Reciprocity and the DMG Antenna Reciprocity subfields within the DMG STA Capability Information field of both initiator and responder, as defined in 10.43.10.5.2.2.2;”
* Lines 17 and 18 (page 312): Replace “The TRN-Unit RX Pattern field in the EDMG-Header-A of EDMG BRP-TX packets used in the Responder BRP TXSS shall be set to 0” with “The TRN\_RX\_PATTERN of the TXVECTOR of PPDUs EDMG BRP-TX packets used in the Responder BRP TXSS shall be set to DIRECTIONAL”
* Lines 29 and 30 (page 312), 1 and 2 (page 313), 13 and 14 (page 313): Replace “The TRN-Unit RX Pattern field in the EDMG-Header-A of EDMG BRP-TX packets used in the Responder BRP TXSS shall be set to 1;” with “The TRN\_RX\_PATTERN of the TXVECTOR of EDMG BRP-TX packets used in the Responder BRP TXSS shall be set to QUASI\_OMNI;”

*Also, please make the following changes:*

* Lines 35-37 (page 308), lines 1-3 (page 317): Replace “The EDMG-Header-A of the *ith* EDMG BRP-TX packet within each of the *Rresp* + 1 repetitions, where 1≤ *i* ≤ *Ninit* + 1, shall have the same value for the fields EDMG TRN Length, EDMG TRN-Unit P, EDMG TRN-Unit M and EDMG TRN-Unit N;” with “The TXVECTOR of the *ith* EDMG BRP-TX packet within each of the *Rresp* + 1 repetitions, where 1≤ *i* ≤ *Ninit* + 1, shall have the same value for the parameters EDMG\_TRN\_LEN, EDMG\_TRN\_P, EDMG\_TRN\_M, and EDMG\_TRN\_N;”
* Lines 17-19 (page 309), lines 14-16 (page 317): Replace “The EDMG-Header-A of the *ith* EDMG BRP-TX packet within each of the *Rinit* + 1 repetitions, where 1 ≤ *i* ≤ *Nresp* + 1, shall have the same value for the fields EDMG TRN Length, EDMG TRN-Unit P, EDMG TRN-Unit M and EDMG TRN-Unit N;” with “The TXVECTOR of the *ith* EDMG BRP-TX packet within each of the *Rinit* + 1 repetitions, where 1 ≤ *i* ≤ *Nresp* + 1, shall have the same value for the parameters EDMG\_TRN\_LEN, EDMG\_TRN\_P, EDMG\_TRN\_M, and EDMG\_TRN\_N;”

*Lastly, please also make the following changes:*

* Lines 3-6 (page 309): Replace “The *jth* TRN subfield of the *kth* TRN-Unit of the *ith* EDMG BRP-TX packet within each of the *Rresp* + 1 repetitions, where 1 ≤ *j* ≤ M+1, 2 ≤ *k* ≤ L+1, and 1 ≤ *i* ≤ *Ninit* + 1, where M is the value of the EDMG TRN-Unit M field and L is the value of the EDMG TRN Length field, shall be transmitted using the same AWV; and” with “The *jth* TRN subfield of the *kth* TRN-Unit of the *ith* EDMG BRP-TX packet within each of the *Rresp* + 1 repetitions, where 1 ≤ *j* ≤ M+1, 2 ≤ *k* ≤ L+1, and 1 ≤ *i* ≤ *Ninit* + 1, where M and L are given by parameters EDMG\_TRN\_M and EDMG\_TRN\_LEN, respectively, shall be transmitted using the same AWV; and”
* Lines 22-25 (page 309): Replace “The *jth* TRN subfield of the *kth* TRN-Unit of the *ith* EDMG BRP-TX packet within each of the *Rinit* + 1 repetitions, where 1 ≤ *j* ≤ M+1, 2 ≤ *k* ≤ L+1, and 1 ≤ *i* ≤ *Nresp* + 1, where M is the value of the EDMG TRN-Unit M field and L is the value of the EDMG TRN Length field, shall be transmitted using the same AWV; and” with “The *jth* TRN subfield of the *kth* TRN-Unit of the *ith* EDMG BRP-TX packet within each of the *Rinit* + 1 repetitions, where 1 ≤ *j* ≤ M+1, 2 ≤ *k* ≤ L+1, and 1 ≤ *i* ≤ *Nresp* + 1, where M and L are given by by parameters EDMG\_TRN\_M and EDMG\_TRN\_LEN, respectively, shall be transmitted using the same AWV; and”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4141 | 10.43.10.5.2.2.1 | 309.07 | "The DMG antenna used when transmitting the TRN field of the Ninit + 1 EDMG BRP-TX packets within one of the Rresp + 1 repetitions in an Initiator BRP TXSS should be different.": confusing | replace with "The initiator should transmit the TRN fiedl of each of the Ninit +1 EDMG BRP-TX PPDUs withing one of the Rresp+1 repetitions in an Initiator BRP TXSS using a different DMG antenna" |

**Proposed resolution**: Revised

**Modifications:** *Please make the following changes*

* Lines 7 and 8, page 309: Replace “The DMG antenna used when transmitting the TRN field of the *Ninit* + 1 EDMG BRP-TX packets within one of the *Rresp* + 1 repetitions in an Initiator BRP TXSS should be different” with “The initiator should transmit the TRN field of each of the *Ninit* + 1 EDMG BRP-TX packets within one of the *Rresp* + 1 repetitions in an Initiator BRP TXSS using a different DMG antenna”.
* Lines 26 and 27, page 309: Replace “The DMG antenna used when transmitting the TRN field of the *Nresp* + 1 EDMG BRP-TX packets within one of the *Rinit* + 1 repetitions in a Responder BRP TXSS should be different.” with “The responder should transmit the TRN field of each of the *Nresp* + 1 EDMG BRP-TX packets within one of the *Rinit* + 1 repetitions in a Responder BRP TXSS using a different DMG antenna”.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4142 | 10.43.10.5.2.4 | 318.14 | "BRP frames sent in a BRP TXSS performed in a 2.16+2.16 GHz or a 4.32+4.32 GHz channel shall be sent using the EDMG control mode": this is limitting and unnecessary for packets carrying long feedback | replace with "BRP frames sent in a BRP TXSS performed in a 2.16+2.16 GHz or a 4.32+4.32 GHz channel with the TXVECTOR parameter EDMG\_TRN\_LEN greater than 0 shall be sent using the EDMG control mode" |

**Proposed resolution**: Accepted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4169 | 10.43.7 | 278.12 | "shall not change their antenna settings". It is unnecessary to mandate receiver behavior here. This text should apply to transmitter settings only. | Change "both STAs (beam tracking initiator and responder) shall not change their antenna settings" to "neither STA (initiator nor respondor) shall change it's transmit antenna AWV". |

**Proposed resolution**: Revised

**Modifications:** *Modify the paragraph in lines 11-15 of page 278 as follows:*

If the beam tracking procedure includes the transmission of BRP-TX~~,~~ or EDMG BRP-TX~~, or EDMG BRP-RX/TX packets~~, ~~both~~ neither STA~~s~~ (~~beam tracking~~ initiator ~~and~~ nor responder) shall not change their antenna settings, except during the transmission of the TRN field in PPDUs used to perform beam tracking, during the procedure. If the beam tracking procedure includes the transmission of EDMG BRP-RX/TX packets, neither STA (initiator nor responder) shall not change their antenna settings, except during the transmission and reception of the TRN field in PPDUs used to perform beam tracking, during the procedure. The STAs shall use the beam tracking procedure feedback and then update their antenna settings before their next TXOP or SP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4268 | 29.3.9.6 | 454.07 | In SISO BRP TXSS, it is allowed EDMG BRP-RX packet to have different antenna configurations in preamble/data portion and in TRN portion, as described in p308.27 | change to "Antenna setting shall remain constant for the transmission of the entire PPDU, except for the case of transmission of EDMG BRP-TX packets EDMG BRP-RX/TX packets, or EDMG BRP-RX packets sent in a SISO BRP TXSS procedure" |

**Proposed resolution**: Revised

**Modifications:** *Please modify lines 7-10 of page 454 as follows:*

Antenna setting shall remain constant for the transmission of the entire PPDU, except for the case of transmission of EDMG BRP-TX packets, ~~and~~ EDMG BRP-RX/TX packets and, when transmitted during a SISO BRP TXSS (see 10.43.10.5), EDMG BRP-RX packets. ~~During the transmission of EDMG BRP-TX packets and EDMG BRP-RX/TX packets, it~~ In these cases, the antenna setting shall remain constant for the transmission of all fields up to the TRN field. The transmission of the TRN field is defined in 29.9.2.2.5.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4460 | 29.9.2.2.5 | 586.33 | "Definition of P, M, N in TRN Field is not consistently used in the text and Figure. First, In 29.9.2.2.5 of D3.0 11ay, it stated that 1) P = value of EDMG TRN-Unit P field 2) M= value of the EDMG TRN-Unit M field + 1 3) N= value of the EDMG TRN-Unit N field. However in Figure 214, it showed that the number of TRN subfields is corresponding to the ""value of the EDMG TRN-Unit M field"" instead of M. So, what is the actual number of transmitted TRN subfields over the air, M or M-1?My understanding is M, but the Figure 214 is contradicting showing M-1." | "Given that Figure 214 is the TRN field structure of the EDMG BRP-TX packet, which is used for TX training down to a TRN-Unit level, I do think that it was incorrect (or at least confusing) to use ""Value indicated by the EDMG TRN-Unit M field"".It will be clearer to use (value of the EDMG TRN-Unit M field + 1), which is the exact number of TRN subfields to be sent over the air. Fix relevent Figures (e.g, Figure 214, 215) to make sure it is consistent with the spec." |

**Proposed resolution**: Revised

**Discussion:** Correction – It is never stated in 29.9.2.2.5 that “P = value of EDMG TRN-Unit P field” nor that “N= value of the EDMG TRN-Unit N field.” Instead, it is defined in 29.9.2.2.5 that

* P is the value *indicated* by the EDMG TRN-Unit P field
* N is the value *indicated* by the EDMG TRN-Unit N field

For example, in lines 30-32 of page 585 (D3.0), we have:

“For EDMG BRP-TX and EDMG BRP-RX/TX packets, each TRN-Unit is comprised of *P* plus *M* repetitions of the TRN subfield defined in 29.9.2.2.6, where *P* is the value *indicated* by the EDMG TRN-Unit P field and *M* is the value of the EDMG TRN-Unit M field in the EDMG-Header-A plus one.”

**Modifications:** *Replace* *Figs. 214 and 215* with the two below (in order)



**Figure 214**



**Figure 215**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4023 | 3.2 | 20.21 | "Issue with the definition of mask >2.16GHz.Not clear why the (b)... are needed and fit.The redlined version is different." | Fix the text |

**Proposed resolution**: Rejected

**Discussion:** Redline version is not different: (b) is in lines 26-30 in the same page (paragraph below). This condition is defined for the scenario when a transmitter changes (e.g., reduces) the bandwidth of a PPDU within a TXOP.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4209 | 29.3.5 | 440.15 | The transmit spectral mask for a 2.16 GHz mask PPDU is identical to the Clause 20 spectral mask, and therefore the transmit spectral mask is being specified in two location in the specification (in Clause 20 and again in Clause 29) and the spectral mask is being renamed in Clause 29. It is not good practice to specify the same requirement in two location in the specification. | Remove the specification for the 2.16 GHz spectral mask in Clause 29 and reference the Clause 20 spectral mask. If desirable rename the spectral mask in Clause 20 the "2.16 GHz spectral mask". |
| 4208 | 3.2 | 30.14 | There is no "2.16 GHz transmit spectral mask" defined in Clause 20. Clause 20 only defines a "transmit mask". | change the definition to read "... PPDU transmitted using the transmit spectral mask defined in Clause 20." |

**Proposed resolution**: Revised

**Discussion:** For reference, here is what we have today in page 440 (lines 15-21):

“For a 2.16 GHz mask PPDU of EDMG and non-EDMG format, the transmit spectral mask shall have a 0 dBr (dB relative to the maximum spectral density of the signal) bandwidth of 1.88 GHz, –17 dBr at 1.20 GHz frequency offset, –22 dBr at 2.70 GHz frequency offset, and –30 dBr at 3.06 GHz frequency offset and above. The transmit spectral mask for frequency offsets in between 0.94 and 1.20 GHz, 1.20 and 2.70 GHz, and 2.70 and 3.06 GHz shall be linearly interpolated in decibels from the requirements for 0.94 GHz, 1.20 GHz, 2.70 GHz, and 3.06 GHz frequency offsets. Figure 176 shows an example of the resulting overall spectral mask.”

**Modifications:**

*Please replace lines 15-21 of page 440 with the following:*

“A 2.16 GHz PPDU of EDMG and non-EDMG format shall adhere to the transmit spectrum mask shown in Figure 20-1.”

*Delete Figure 176.*

*Modify lines 13-17 of page 20 as follows:*

2.16 GHz mask physical layer (PHY) protocol data unit (PPDU): One of the following PPDUs transmitted using the transmit spectral mask defined in Clause 20: a) A directional multi gigabit (DMG) PPDU ~~transmitted using the 2.16 GHz transmit spectral mask defined in Clause 20~~; b) A 2.16 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG) ~~transmitted using the 2.16 GHz transmit spectral mask defined in Clause 29~~.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4339 | 10.43.10.5.1 | 307.06 | Need to make figure more symmetrical between initiator BRP TXSS and Responder BRP TXSS to prevent confusion | add SFIS between packet 0, Rinit = 0 for responder BRP TXSS; add SIFS after pacek Nresp in Rinit = 0 for responder BRP TXSS |

**Proposed resolution**: Accepted

**Discussion:** New figure is below.



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4340 | 10.43.10.5.1 | 307.27 | "If receive training of the initiator is included in the procedure, the TRN field of the one or more EDMG BRP-RX packets". Confusing that have 1 for receiver training for the responder and more than one for receive traingin for the intiator." | Understand that this has been explained on pg 313 line 35 but it may be helpful to have a note to say that unlike BRP TXSS, may have scenarios where we may use more than 1 that depends on the reciprocity |

**Proposed resolution**: Revised

**Modifications:** *Please modify lines 26-30 in page 307 as follows:*

If receive training of the initiator is included in the procedure, the TRN field of the one or more EDMG BRP-RX packets sent immediately after the Responder BRP TXSS are transmitted by the responder and received by the initiator using antenna configurations determined in the preceding phases of the procedure. As defined in 10.43.10.5.2.2.2, the number of EDMG BRP-RX packets transmitted in the receive training of the initiator depends on reciprocity characteristics of the initiator and the responder. The BRP TXSS is concluded with the transmission of a BRP frame with acknowledgement.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4342 | 29.9.2.2.3 | 584.18 | "An EDMG STA that has the DMG TRN RX Only Capable subfield in its EDMG Capabilities element equal to 0 shall support the following transmit and receive configurations of the EDMG TRN-Unit P, EDMG TRN-Unit M and EDMG TRN-Unit N fields in a PPDU:" may want to add link to Table 57 to enable readers find the legend for the parameters. Had a problem initially with the 3rd example and had to go and look for the table to find that it was fine. | Add refernece to Table 57 in note? |

**Proposed resolution**: Revised

**Modifications:** *Please modify lines 10-17 in page 584 as follows:*

The Packet Type field within the L-Header together with the indication that the PPDU is an EDMG PPDU as defined in 29.3.3.2.4 (L-Header definition) are used to indicate that a packet is an EDMG BRP packet. In the EDMG-Header-A of an EDMG PPDU, as defined in Table 57, the fields EDMG TRN Length, RX TRN-Units per Each TX TRN-Unit, the EDMG TRN-Unit P, EDMG TRN-Unit M and EDMG TRN-Unit N are used to indicate the length of the training field, the EDMG BRP-RX/TX packet configuration, the number of TRN subfields in a TRN-Unit that are used for channel estimation, the number of TRN subfields in a TRN-Unit that are used for beamforming training, and the number of consecutive TRN subfields within EDMG TRN-Unit M which are transmitted using the same AWV, respectively.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 4345 | 10.43.7 | 275.27 | "If BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Requested, EDMG\_BEAM\_TRACKING\_TYPE parameter in the RXVECTOR is Baseband Beam Tracking, and EDMG\_PACKET\_TYPE parameter in the RXVECTOR is EDMG-TRN-R-PACKET, follow the rules described in 29.9.2.2 and shall include TRN-" order here is DMG tracking, baseband then analog. On pg 276 line 39, its DMG tracking, analog then baseband. Order in both cases is different. | Decide on one order and switch the paragraphs around. |

**Proposed resolution**: Revised

**Discussion:** *For reference, here is what we have in lines 27-32 of page 275:*

If BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Requested, EDMG\_BEAM\_TRACKING\_TYPE parameter in the RXVECTOR is Baseband Beam Tracking, and EDMG\_PACKET\_TYPE parameter in the RXVECTOR is EDMG-TRN-R-PACKET, follow the rules described in 29.9.2.2 and shall include TRN-R subfields to the following packet transmitted to the initiator in the same allocation, with an MCS index greater than 0.

**Modifications:** *Please modify lines 19-24 in page 277 as follows:*

A beam tracking responder that receives a packet with RXVECTOR parameter BEAM\_TRACKING\_REQUEST equal to Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_REQUEST equal to Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_TYPE to Analog Beam Tracking, ~~BEAM\_TRACKING\_REQUEST equal to Beam Tracking Not Requested,~~ EDMG\_PACKET\_TYPE equal to EDMG-TRN-R-PACKET, and EDMG\_TRN\_LEN to a nonzero value shall follow the rules described in 29.9.2.2 and may use the TRN-R subfields appended to the received packet to perform receive beam training.