

IEEE Standards Interpretations for IEEE Std 802.11n™-2009 — IEEE Standard for Information Technology-Telecommunications and information exchange between systems--Local and metropolitan area networks-Specific requirements--Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications--Amendment 5: Enhancements for Higher Throughput

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Interpretation Request #1

Topic: 20Mhz Protection Mode **Clause, Subclause, Annex, Figure, or Table:** Table 7-43q – HT Operation element; and 9.13.3 Protection mechanisms for transmissions of HT PPDU_s

Table 7-43q defines 20MHz protection mode. In 9.13.3.1 General is explained when the HT Protection field is set to 20 MHz protection mode. However, I am missing the directions for the STA or AP what to when this mode is set in all cases.

Two paragraphs contain references to 20MHz protection mode:

- When the HT Protection field is set to no protection mode or 20 MHz protection mode and the Nongreenfield HT STAs Present field is set to 0, no protection is required since all HT STAs in the BSS are capable of decoding HT-mixed format and HT-greenfield format transmissions.
- When the HT Protection field is set to no protection mode or 20 MHz protection mode and the Nongreenfield HT STAs Present field is set to 1, HT transmissions that use the HT-greenfield format shall be protected. This protection may be established by transmitting a PPDU with the TXVECTOR FORMAT parameter set to HT_MF or any of the methods described in Table 9-8.

There is no paragraph regarding transmissions of non-greenfield frames in a non-greenfield environment, specifically, do non-greenfield frames sent with 40MHz channel width need to be protected when 20 MHz protection mode is set?

Or is the sentence

- When the HT Protection field is not set to no protection mode or the Secondary Channel Offset field is set to SCN, a STA shall not transmit a 40 MHz HT PDU (TXVECTOR parameter CH_BANDWIDTH set to HT_CBW40) to initiate a TXOP.

the one instructing to use protection?

Interpretation Response #1

IEEE Std 802.11n-2009 is unambiguous on this issue:

The standard defines protection mode for HT STAs in 9.13.3.1:

- "Transmissions of HT PPDU, referred to as HT transmissions, are protected if there are other STAs present that cannot interpret HT transmissions correctly. " (see first sentence) and "20 MHz protection mode indicates that 1) all detected STAs are HT, 2) the BSS is 20/40 and 3) at least one HT STA is 20 MHz only" (see 9.13.3.1, fourth paragraph).
- When all STAs are HT-STAs, each STA is able to decode the HT-SIG of a 40 MHz packet.
- Initiation of a TXOP is addressed in 9.13.3.1 (last paragraph).