

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD.,  
Petitioner

v.

WILUS INSTITUTE OF STANDARDS AND TECHNOLOGY INC.,  
Patent Owner

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Case IPR2025-01069  
U.S. Patent No. 10,313,077

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**PETITIONER'S REPLY TO**  
**PATENT OWNER'S PRELIMINARY RESPONSE**

Patent Owner (“PO”) falsely asserts that “Petitioner altered [] Bharadwaj-Prov59’s formula to create an appearance that Bharadwaj-59 discloses the method in the ’077 Patent” by “chang[ing] the RXTIME formula disclosed in Bharadwaj-Prov59 in their example as  $RXTIME = \left\lceil \frac{(240+m)+3}{3} \right\rceil \times 4 + 20 = 348.$ ” POPR, 17 (citing Petition, 22, 57). PO argues that this “alteration is truly disingenuous as the formula in Bhardwaj-Prov59 [*sic*] clearly discloses it’s ‘ $L_{LENGTH} - m$ ’ not ‘ $L_{Length} + m$ ’ in Petition’s example.” POPR, 17-18. Pursuant to the Board’s authorization, Petitioner submits this Reply to clarify the record and dispel PO’s false charges.

Contrary to PO’s assertions, the Petition accurately applied the prior art equations. Indeed, it is PO, not Petitioner, that injects confusion by conflating the RXTIME equation for *legacy* 802.11ac devices with the RXTIME equation disclosed in Bharadwaj-Prov59 for *non-legacy* 802.11ax devices. Specifically, the POPR erroneously compares Bharadwaj-Prov59’s *non-legacy* RXTIME formula where  $m$  is subtracted (*see* EX1007, ¶56) to the *legacy* RXTIME formula (*see* EX1009, 313-314 (Eq. 22-105)) addressed at page 22 of the Petition where  $m$  is not subtracted. POPR, 17; Pet., 22. The Petition did not alter the non-legacy equation but applied a different equation altogether. *Id.*

As discussed in the Petition, both legacy and non-legacy receiving devices detect non-legacy 802.11ax transmissions. Pet., 13-7. Non-legacy 802.11ax packets carry a length value  $L_{LENGTH}$  used by both types of receiving devices to calculate

RXTIME. *Id.*, 15-16; *generally* 18-30. Transmitting devices determine a value of  $L_{LENGTH}$  to include in non-legacy packets by adding  $m$  to the legacy  $LENGTH$  value, where the addition of  $m$  allows non-legacy receivers to discern that the packet format is non-legacy:

$$L_{LENGTH} = \left\lceil \frac{RXTIME-20}{4} \right\rceil \times 3 - 3 + m = LENGTH + m$$

Pet., 17-18 (citing EX1007, [0051]), 23-24 (citing EX1008, 925, 1597).

The Petition at page 22 addresses the equation  $RXTIME = \left\lceil \frac{LENGTH+3}{3} \right\rceil \times 4 + 20$  “for *legacy* devices” and explains how the RXTIME is calculated by “the *legacy* 802.11ac devices” based on receiving Bharadwaj-Prov59’s  $L_{LENGTH}$  information from a *non-legacy* device (*i.e.*,  $LENGTH + m$  shown above) would be  $RXTIME = \left\lceil \frac{L_{LENGTH}+3}{3} \right\rceil \times 4 + 20 = \left\lceil \frac{(LENGTH+m)+3}{3} \right\rceil \times 4 + 20 = \left\lceil \frac{(240+m)+3}{3} \right\rceil \times 4 + 20 =$

348. Pet., 22-23; *see also* EX1007, ¶¶51 (“the duration of the data unit 330 ... is included in a Length field ( $L_{LENGTH}$ ) of the legacy signal (L-SIG) field of the legacy preamble”), 3, 29; EX1009, 314 (“LENGTH in Equation (22-105) is the LENGTH field in L\_SIG”). In other words, the Petition addresses how the use of Bharadwaj-Prov59’s  $L_{LENGTH}$  (*i.e.*,  $LENGTH + m$ ) value as the  $LENGTH$  value in non-legacy packets impacts the RXTIME calculation for non-legacy packets on *legacy* 802.11ac devices. *Id.* PO’s contention that the Petition at page 22 somehow altered Bha-

radwaj-Prov59's *non-legacy* RXTIME formula cannot be correct because the Petition directly applies the RXTIME formula for *legacy* devices using an  $L_{LENGTH}$  value obtained from a non-legacy packet. Pet., 22. The Petition at page 22 does not modify the *non-legacy* RXTIME formula from ¶56 of Bharadwaj-Prov59 at all. See Pet., 22.

The POPR separately alleges that Petitioner was “disingenuous” in altering Bharadwaj-Prov59's non-legacy RXTIME equation at page 57 of the Petition. See POPR, 17. This charge is similarly baseless, although for a distinct reason. In particular, the discussion at page 57 of the Petition explicitly relates to the  $L_{LENGTH}$  and RXTIME equations of Bharadwaj *as modified by Yu-Prov428* in the proposed combination system. The Petition never represented that the RXTIME equation on page 57 is Bharadwaj-Prov59's original RXTIME equation. See Pet., 57 (“By applying Yu-Prov428's suggestion to subtract  $m$ ... to set  $L_{LENGTH}$ ..., the receiver computes RXTIME and  $N_{sym}$  as follows...”).

Noticeably, PO never disputes that Yu-Prov428 and Lee both disclose equations that *subtract* a constant (e.g., “ $M$ ” or “ $n$ ” respectively) from the  $LENGTH$  value (as opposed to adding a constant as in Bharadwaj-Prov59) and as such lead to the same sign of “ $m$ ” that PO identifies as the point of novelty of the '077 Patent. Pet., 20, 27 (citing EX1020, 16; EX1019, ¶232; EX1018, ¶¶78-79; POPR, 7-9). PO instead resorts to baseless assertions that Petitioner disingenuously altered the prior art equations. Not so. The Board should reject PO's arguments and institute IPR.

Respectfully submitted,

Dated November 13, 2025

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**CERTIFICATE OF SERVICE**

Pursuant to 37 CFR §§ 42.6(e)(4) and 42.205(b), the undersigned certifies that on November 13, 2025, a complete and entire copy of this Petitioner's Reply to Patent Owner's Preliminary Response was provided by email to the Patent Owner by serving the correspondence email address of record as follows:

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