

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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VALVE CORPORATION,  
Petitioner,

v.

IMMERSION CORPORATION  
Patent Owner.

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Case No. IPR2024-00582  
Patent No. 11,175,738

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

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| <b>Exhibit</b> | <b>Description</b>                                                                                           |
|----------------|--------------------------------------------------------------------------------------------------------------|
| <b>1001</b>    | U.S. Patent No. 11,175,738                                                                                   |
| <b>1002</b>    | Prosecution History of U.S. Patent No. 11,175,738                                                            |
| <b>1003</b>    | Prosecution History of European Counterpart to U.S. Patent No. 11,175,738                                    |
| <b>1004</b>    | Declaration of Dr. Gregory Welch (“Welch”)                                                                   |
| <b>1005</b>    | CV of Dr. Gregory Welch                                                                                      |
| <b>1006</b>    | U.S. Patent Application Publication 2012/0249474A1 (“Pratt”)                                                 |
| <b>1007</b>    | U.S. Provisional Patent Application No. 61/470,764<br><i>(incorporated by reference in Pratt)</i>            |
| <b>1008</b>    | U.S. Patent No. 8,531,319 (“Ku”)                                                                             |
| <b>1009</b>    | U.S. Patent Application Publication 2013/0147728 (“Lee”)                                                     |
| <b>1010</b>    | U.S. Patent Application Publication 2015/0061703 (“Jiang”)                                                   |
| <b>1011</b>    | U.S. Patent Application Publication 2014/0139329 (“Ramstein”)<br><i>(incorporated by reference in Jiang)</i> |
| <b>1012</b>    | U.S. Patent No. US 8,970,513 (“Kwon”)                                                                        |
| <b>1013</b>    | Exhibit G to Immersion’s Preliminary Infringement Contentions                                                |
| <b>1014</b>    | EP 2141580A2 (Ku’s European Counterpart)                                                                     |
| <b>1015</b>    | U.S. Patent Application Publication 2010/0004033 (“Choe”)                                                    |
| <b>1016</b>    | U.S. Patent Application Publication 2008/0024459 (“Poupyrev”)                                                |
| <b>1017</b>    | U.S. Patent Application Publication 2018/0356891 (“Murakami”)                                                |
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| <b>1019</b>    | U.S. Patent No. 9,069,417 (“Rimon”)                                                                          |
| <b>1020</b>    | U.S. Patent Application Publication 2005/0134561 (“Tierling”)                                                |
| <b>1021</b>    | U.S. Patent Application Publication 2017/0300166 (“Rosenberg ’166”)                                          |
| <b>1022</b>    | U.S. Patent Application Publication 2017/0285848 (“Rosenberg ’848”)                                          |

| <b>Exhibit</b> | <b>Description</b>                                                                                                                          |
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| <b>1023</b>    | U.S. Patent Application Publication 2009/0106655 (“Grant”)                                                                                  |
| <b>1024</b>    | U.S. Patent Application Publication 2011/0102162 (“Gregorio”)                                                                               |
| <b>1025</b>    | U.S. Patent No. 7,902,474 (“Mittleman”)                                                                                                     |
| <b>1026</b>    | New Oxford American Dictionary, Third Edition (2010), definition of “pressure”                                                              |
| <b>1027</b>    | American Heritage Dictionary of the English Language, Fifth Edition (2011), definition of “pressure”                                        |
| <b>1028</b>    | U.S. Patent Application Publication No. 2012/0143182 (“Ullrich”)                                                                            |
| <b>1029</b>    | McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition (2002), definition of “signal”                                      |
| <b>1030</b>    | Federal Court Management Statistics (September 2023)                                                                                        |
| <b>1031</b>    | <i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712, Dkt. No. 46 (Order Setting Jury Trial Date) (May 18, 2023)                           |
| <b>1032</b>    | Plaintiff’s Preliminary Infringement Contentions, <i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712 (W.D. Wash.) (served Oct. 20, 2023) |
| <b>1033</b>    | <i>Immersion Corp. v. Valve Corp.</i> , 2:23-cv-00712, Dkt. No. 15 (Proof of Service) (May 18, 2023)                                        |
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| <b>1036</b>    | December 19, 2024 Deposition Transcript of Gregory Welch, Ph.D.                                                                             |
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| <b>1038</b>    | <i>Immersion Corp. v. Valve Corp.</i> , N.D. Cal. 2:23-cv-00712, Dkt. No. 1 (Complaint for Patent Infringement) (May 15, 2023)              |
| <b>1039</b>    | U.S. Patent Application Publication 2014/0347177A1 (“Phan”)                                                                                 |
| <b>1040</b>    | U.S. Patent Application Publication 2014/0139448A1 (“Levesque-1”)                                                                           |
| <b>1041</b>    | U.S. Patent Application Publication 2014/0118127A1 (“Levesque-2”)                                                                           |

| Exhibit | Description                                            |
|---------|--------------------------------------------------------|
| 1042    | Reply Declaration of Dr. Gregory Welch (“Welch-Reply”) |

## I. INTRODUCTION

Immersion’s Patent Owner Response (“POR”) solely disputes whether Valve’s prior art references disclose or render obvious outputting “*a haptic effect*” in response to a “*haptic output signal based at least in part on the first and second sensor signals.*”<sup>1</sup> Immersion does not dispute that all other claim elements were known—including outputting (1) a “*first sensor signal*” based on a “*non-contact interaction with a touch sensitive device*” and (2) a “*second sensor signal*” based on a touch.

Valve’s Petition detailed three separate and independent reasons why the prior art disclosed or at minimum rendered obvious outputting a “*haptic effect*” in response to “*a haptic output signal*” that is based on both proximity and touch inputs.

**First**, Pratt discloses a “bubble effect” that simulates a mechanical button click just like an analogous haptic effect later disclosed in the ’738 Patent. Petition, 24-26 (discussing “first” embodiment relevant to Ground 1). Pratt describes this “click effect” as a “*proximity*-based” operation while also stressing that the “haptic effect” begins when a *touch* is detected. EX1006, ¶¶50-51.<sup>2</sup>

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<sup>1</sup> These interrelated claim elements are found in limitations 1[C]/1[F], 15[C]/15[F] and 19[C]/19[F].

<sup>2</sup> Emphasis added unless indicated; claim language italicized.

**Second**, Pratt discloses or at minimum renders obvious a separate “rate of approach” embodiment in which the haptic effect begins after a user’s finger touches the screen, but the effect’s nature depends on how quickly the finger had approached the screen. Petition, 26-28 (discussing “second” embodiment relevant to Ground 1).

**Third**, it would have been obvious to implement Ku’s Figures 7 and 12 (illustrating **combined “vibration 715”** incorporating both proximity and touch-related components 705 and 710) by sending a single command to the haptic driver to generate vibration 715—a more efficient alternative to sending multiple commands that the driver combines. Petition, 50-55, 56-60, 66, and 77-79 (discussing Grounds 2, 3, and 4).<sup>3</sup>

Immersion fails to rebut the crux of Valve’s explanations concerning the second and third reasons—confirming that at minimum the challenged claims are (1) anticipated or alternatively obvious based on Pratt’s “rate of approach” embodiment and (2) obvious based on Ku’s disclosures.

As to Pratt’s “rate of approach” embodiment (in Ground 1), Immersion and its expert **completely ignore** a key paragraph in Pratt (*i.e.*, ¶39) which describes the

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<sup>3</sup> Valve’s Petition discussed this obvious implementation in connection with Ground 2 (obviousness based on Pratt and Ku), Ground 3 (obviousness based on Ku), and Ground 4 (obviousness based on Ku and Jiang).

actual haptic effect beginning only when the user’s finger touches the screen. Immersion and its expert inexplicably failed to address this paragraph even though Valve’s Petition (at 26-28) and the Board’s Institution Decision (at 16-18) each highlighted it for purposes of both anticipation and obviousness. *See infra* §II.A.

As to Ground 3, Immersion and its expert likewise completely ignore Valve’s explanation why Ku renders the identified claims obvious given the advantages of outputting a haptic effect in response to a single haptic command rather than multiple commands. Immersion and its expert only address whether Ku **anticipates** the identified claims—ignoring Valve’s explanation why outputting a haptic effect in response to a single haptic command based on both proximity and touch inputs would have been obvious. *See infra* §II.B.

Collectively, Grounds 1 and 3 cover all Challenged Claims. Accordingly, for the above-noted reasons detailed in Valve’s Petition and left unrebutted in Immersion’s POR, the Board can and should cancel all Challenged Claims even without addressing Immersion’s POR arguments. In any event, Immersion’s arguments lack merit.

Immersion’s response to Pratt’s “bubble effect” embodiment (i.e., the other disclosure—aside from the “rate of approach” embodiment—addressed in Ground 1) hinges on an unduly narrow construction of “*haptic effect*” that would exclude preferred embodiments by limiting “*haptic effect*” to a “single, unmodified haptic

effect.” POR, 18-35. *See infra* §III.A. The specification repeatedly states, however, that “the haptic effect can include **one or more** haptic effects” (EX1001, 10:47-48, 11:37-38) and further that the “effect” can be a “sensation” (*see, e.g., id.*, 5:19-23, 9:59-62). On this latter point, Immersion does not dispute the Board’s institution-stage observation that Pratt’s “effect would appear to be a different **sensation** to the user if pre-charging” (which “relies on the proximity sensor”) “did not happen.” Institution Decision (ID), 15.

Immersion’s arguments concerning Pratt-Ku (Ground 2) and Ku-Jiang (Ground 4) also fail.

Aside from ignoring Valve’s explanation concerning the improved efficiency of outputting a haptic effect in response to a single haptic command (*see* POR, 36-50),<sup>4</sup> Immersion’s response to Pratt-Ku merely contests whether POSAs would have combined Ku with Pratt (POR, 50-52). But as Valve explained and Immersion never

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<sup>4</sup> *See supra* note 3. The distinction between Ground 2 (obviousness based on Pratt-Ku) and Ground 3 (obviousness based on Ku) is now academic because Immersion does not dispute that both Pratt and Ku disclose all claim elements other than generating “*a haptic effect*” following a “*haptic output signal based at least in part on the first and second sensor signals.*”

refutes, Pratt was “ready for improvement” (Petition, 47-48) based on Ku’s software routines.

Immersion’s response to Ku-Jiang likewise contests whether POSAs would have combined Jiang with Ku (POR, 54-55). But Valve identified specific technical reasons to incorporate Jiang’s EMP sensor into Ku’s device. Petition, 77-79 (citing Welch, ¶¶293-295 and 297-299). Ignoring this evidence, Immersion instead dwells on the legally irrelevant observation that Valve’s reasons for combining Ku and Jiang do not concern using “both proximity and touch signals.” POR, 55. As Valve explained and Immersion never refutes, Ku itself renders obvious using proximity **and** touch signals to determine a single drive command and corresponding haptic effect—Jiang would simply have motivated POSAs to use an EMP-based sensor to generate those signals. *See infra* II.B.

## **II. ALL CHALLENGED CLAIMS ARE UNPATENTABLE BASED ON EVIDENCE TO WHICH IMMERSION OFFERS NO RESPONSE**

### **A. Immersion Never Addresses Valve’s Evidence and Explanation Concerning Pratt’s “Rate of Approach” Embodiment (Ground 1)**

Valve’s Petition explained why Pratt’s “rate of approach” embodiment disclosed or at minimum rendered obvious outputting a “*haptic effect*” in response to a “*haptic output signal*” that is based on **both** proximity and touch inputs because Pratt discloses an implementation in which (1) a haptic effect is only generated when a user’s finger contacts the screen (a touch-based signal), but (2) the nature of that

effect depends on how quickly the finger had approached the screen (a proximity-based signal). Petition, 26-28. Valve cited Pratt’s paragraphs 39 and 41 along with corresponding expert testimony discussing both paragraphs. Petition, 26-28 (citing Welch, ¶¶148-151).

For one, the Petition explained how and why POSAs would understand that Pratt’s paragraph 41—disclosing different haptic effects depending on the rate at which a user’s finger approaches the screen—is a particular embodiment of Pratt’s paragraph 39, which describes generating a haptic effect “upon touch screen contact.” Petition, 26-27 (citing Welch, ¶¶148-149); Pratt ¶ 39. The two paragraphs together thus discuss an embodiment selecting and producing a haptic effect based on both proximity and touch signals. And that haptic effect would be “single” and “unmodified” under any reasonable understanding of Immersion’s proposed claim construction. Tellingly, Immersion never mentions its proposed construction when addressing Pratt’s “rate of approach embodiment.”

Separately, the Petition explained that at minimum “it would have been obvious to implement [Pratt’s] paragraph 41 this way” (i.e., based on paragraph 39) to “generat[e] different haptic output signals to distinguish between touches based on quick approach rates versus touches based on slower approach rates (as described in paragraph 41) while also minimizing latency (as described in paragraph 39).” Petition, 28 (citing Welch, ¶150-151).

When instituting review, the Board found “persuasive Valve’s argument that Pratt discloses, or at least makes obvious, that its ultimate haptic effect, which occurs after the touch, may be different depending on whether the approach to the surface was fast or slow.” ID, 17. The Board cited Pratt’s paragraph 39 as well as paragraphs 148-150 of Dr. Welch’s declaration. *Id.*, 16-18. Consistent with Valve’s Petition, the Board cited paragraph 39 both in connection with both anticipation and obviousness. *Id.*

Nevertheless, Immersion’s Response and accompanying expert declaration (EX2006, hereinafter “Akl”) never address Valve’s explanation and accompanying expert testimony concerning how POSAs would understand Pratt’s paragraphs 39 and 41 **together**. See POR, 35; Akl, ¶¶96-97. Immersion’s one-page discussion of the “rate of approach” issue instead **ignores paragraph 39** and Dr. Welch’s corresponding testimony. POR, 35. Instead, Immersion dwells solely on paragraph 41 even though Immersion wrongly accuses the Board of quoting language “out of context.” POR, 35. Immersion’s own expert witness testimony concerning the “rate of approach” issue likewise relies exclusively on paragraph 41. Akl, ¶¶96-97. Neither Immersion nor its expert Dr. Akl even acknowledge Dr. Welch’s testimony concerning how POSAs would understand Pratt’s paragraph 41 **together** with paragraph 39.

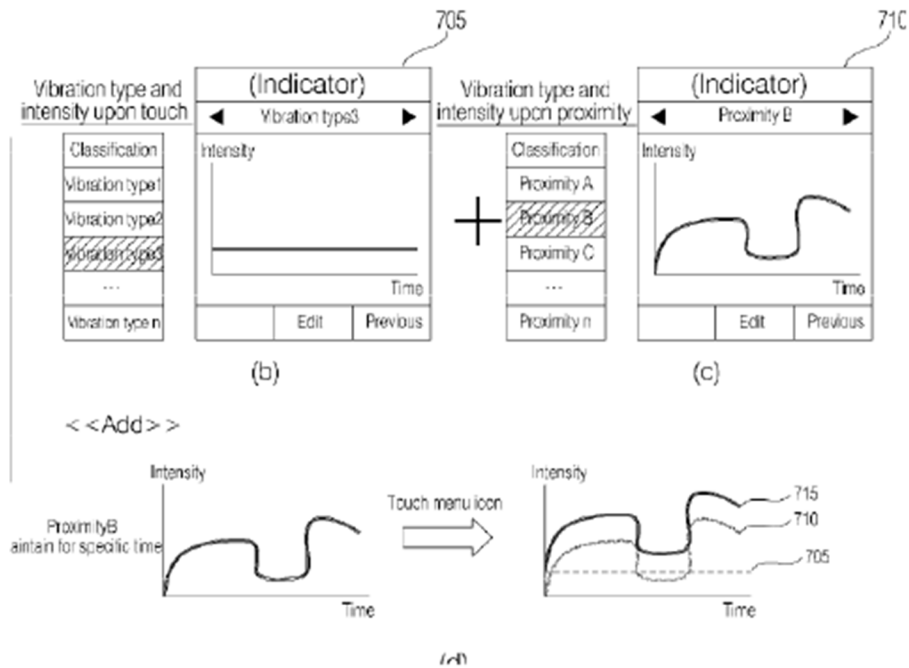
Immersion’s failure to address Pratt’s paragraph 39 is inexplicable given that the Board’s institution decision highlighted Dr. Welch’s reliance “**on paragraph 39 of Pratt.**” ID, 17. The Board rightly cited this analysis to refute Immersion’s POPR argument that Valve’s obviousness argument relied solely on expert testimony. POPR, 42.<sup>5</sup>

**B. Immersion Never Addresses Valve’s Evidence and Explanation Why Ku Renders Obvious a Haptic Effect from a Single Haptic Command Signal Based on Both Proximity and Touch Inputs (Ground 3)**

As the Petition explained and Immersion does not dispute, Ku’s Figure 12 illustrates a means to implement Ku’s Figure 7. Petition, 52-53. Figure 7 itself illustrates how, if after determining that “the touch signal has been input through the specific menu icon, the controller 180 outputs vibration in which a vibration signal corresponding to the proximity signal...and a vibration signal corresponding to the touch signal...are **combined** through the haptic module 157 (S520).” Petition, 51 (citing Ku, 12:18-26). Ku’s Figure 12 illustrates one exemplary combination of a first proximity-related vibration (710) and a second touch-related vibration (705). Together, they constitute vibration 715:

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<sup>5</sup> Immersion’s POR dropped this argument—thereby waiving it. *See* Paper 11, 10 (“[A]ny arguments for patentability not raised in the response may be deemed waived.”)



See also Petition, 51-52. As the Board noted, “if the user touches a menu item after hovering over it, proximity-associated output signal 710 is **added** to touch-associated output signal 705 to produce vibration 715.” ID, 23.

As Valve’s Petition also explained, generating a single “haptic output signal” calling for Ku’s vibration 715 based on both the proximity and touch signals and sending it to the haptics driver would have been more efficient than sending multiple haptic output signals to the driver to process collectively. Petition, 54 (citing Welch, ¶226 & EX1020, [0062]). This approach would also simplify driver design by reducing required processing power. Petition, 54 (citing Welch, ¶226)

Indeed, as Dr. Welch testified, POSAs would have recognized the benefits of such consolidation based on teachings such as Tierling, which discloses a “haptic device controller 130” “within [a] processor” that outputs “a control signal” to

“control[] the tactile output [] of the haptic device 124.” Welch, ¶226 (quoting EX1020, [0045]-[0046] & [0048]). Controller 130 includes an “effect combiner/sequencer 308” that can “combine [] multiple effects.” Welch, ¶226 (quoting EX1020, [0062]); *see also* EX1020, FIG. 3B:

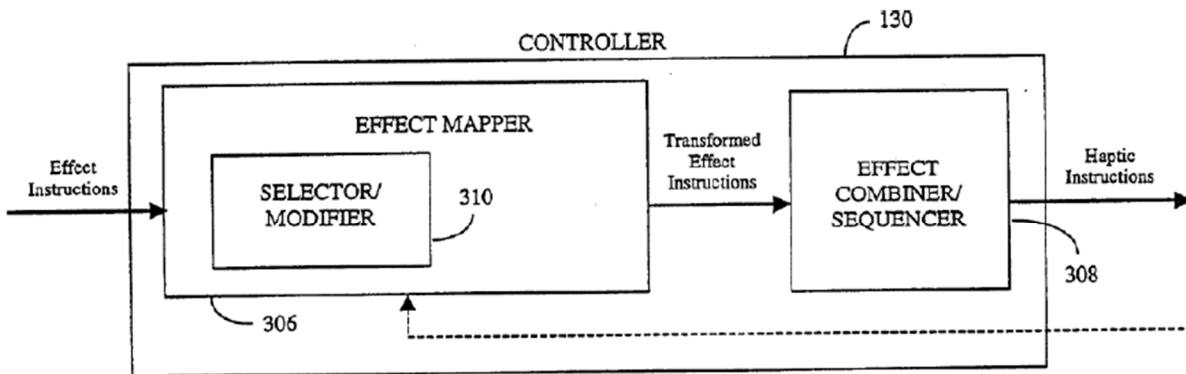


*Fig. 3B*

As Dr. Welch further noted, Tierling teaches that that the “effect combiner/sequencer 308...saves synthesizer and/or processor resources.” Welch, ¶226 (quoting EX1020, [0062]). Tierling also discloses “code to: superimpose multiple haptic instructions...to create at least **one superimposed haptic instruction**” associated with a “haptic signal.” Welch, ¶226 (discussing Tierling’s claim 6).

As this evidence reflects, POSAs would have recognized the utility of Tierling’s code in implementing Ku’s Figure 12 and generating a *single* haptic output signal to output Figure 12(d)’s vibration 715. Welch ¶¶226, 259; *see also* Petition, 54, 66 (citing Dr. Welch’s testimony). In this obvious implementation,

vibration 715 is a “single” and “unmodified” “*haptic effect*” under any reasonable understanding of even Immersion’s proposed construction.

Tellingly, **Immersion never attempts to rebut Valve’s obviousness theory concerning Ku.** Immersion never even acknowledges Tierling—notwithstanding the explanatory parenthetical in Valve’s petition and citation to Dr. Welch’s in-depth testimony. Petition, ¶54 (citing EX1020 & Welch ¶226). Such evidence—cited in Valve’s Petition but ignored in Immersion’s response—highlights “the state of the art at the time of the invention” for purposes of assessing obviousness. *Genzyme Therapeutic Prods. Ltd. P’ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1369 (Fed. Cir. 2016).

Immersion and its expert attack a strawman when reasoning that Valve’s Petition discusses “a command signal causing vibration 715” even though “there is no such command signal disclosed in Ku.” POR, 53 (citing Akl, ¶116)). Valve and Dr. Welch do not suggest that Ku itself literally discloses a single command signal causing vibration 715. Instead, Valve’s evidence explains why generating a single “command signal causing vibration 715...and sending it to the haptics driver **would have been more efficient** than sending multiple haptic output signals to the haptics driver.” Petition, 66 (citing Welch ¶¶258-259 & Petition, §VII.B.3). And that single command signal—based on both proximity and touch inputs—would yield a haptic effect that is “single” and “unmodified” under any reasonable understanding of

Immersion’s proposed construction (as confirmed by Immersion’s focus on Ku’s express disclosures rather than Valve’s obviousness evidence).

Immersion likewise attacks a strawman when asserting that “Ku is not substantively different from Choe and **does not anticipate the ’738 Patent** for the same reasons, namely that two sequential haptic effects are not the same as a single, unmodified haptic effect that is based on two separate sensor input signals—proximity and touch.” POR, 53. Valve’s Petition does not contend that Ku anticipates the ’738 Patent. The Petition instead explains why Ku (or alternatively Ku-Jiang) renders the Challenged Claims obvious because generating a single command signal to directly generate vibration 715—rather than generating two signals to generate two different overlapping vibrations—**would have been obvious**. Petition, 66 (citing Welch ¶¶258-259 & Petition, §VII.B.3).

By contrast, Choe arose during prosecution only in connection with an **anticipation** rejection of the independent claims. The Examiner never addressed whether it would have been obvious to modify Choe to output a “*haptic effect*” in response to a “*haptic output signal based at least in part on the first and second sensor signals.*” Nor would Valve’s obviousness theory based on Ku (i.e., the improved efficiency of directly generating vibration 715 based on a single haptic output command, as illustrated in Tierling) even have been applicable to Choe. As Immersion stressed during prosecution, Choe discloses two “separated” haptic

effects (EX1002, 1036) that were **not** output at “overlapping times” (*id.*, 1075). By contrast, Immersion admits that Ku discloses circumstances under which “two haptic effects occur at **the same time** and the vibration signals are summed.” POR, 52. Such circumstances—exemplified by Ku’s vibration 715—underly Valve’s Ku-based obviousness theory explaining why POSAs would have implemented the summed vibration as a single “*haptic effect*” output in response to a single haptic command. Ku plainly is **not** “fundamentally the same as Choe” (POR, 52).

By contrast, Ku *is* fundamentally the same as Ku’s European counterpart (EX1003), which was extensively discussed during prosecution of the European counterpart to the ’738 Patent. Petition, 7-8. Immersion does not dispute that its European claims mirror those in the ’738 Patent. Petition, 7. Yet Immersion abandoned the European application after repeated rejections over Ku’s European counterpart. Petition, 7-8.

**C. Immersion Never Addresses Valve’s Expert Testimony and Instead Relies on Unreliable Expert Testimony of Its Own**

More generally, it bears note that Immersion and its expert witness Dr. Akl never address Dr. Welch’s extensive testimony (EX1004) even though Dr. Akl nominally considered it (EX2008 (“Akl”), ¶21).<sup>6</sup>

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<sup>6</sup> Immersion deposed Dr. Welch, yet did not provide the transcript with its POR. Valve provides a copy herewith as Exhibit 1036.

The above-discussed testimony concerning the Tierling reference is just one of multiple instances in which Dr. Welch elaborated upon specific supporting evidence. By contrast, Dr. Akl repeatedly parrots Immersion’s POR. The Board has repeatedly given little weight to similar conclusory testimony from Dr. Akl. *See, e.g., Cont’l Auto. Sys., Inc. v. Intell. Ventures II LLC*, IPR2022-00972, Paper 49 at 16-17 (Dec. 5, 2023) (noting that Dr. Akl’s testimony was “of little value” because it did “little more than repeat [counsel’s] arguments”); *Securus Techs., Inc., v. Glob. Tel-link Corp.*, IPR2015-00153, Paper 12 at 7 (May 1, 2015) (declining to credit Dr. Akl’s testimony, which was “conclusory” and raised “concerns regarding [its] accuracy”).

### **III. IMMERSION’S ARGUMENTS FAIL**

While ignoring the crux of Valve’s unpatentability challenge based on Pratt’s “rate of approach” embodiment (*see supra* §II.A) and Ku’s Figures 7 and 12 (*see supra* §II.B), Immersion instead dwells on arguments irrelevant to these grounds. The Board can and should therefore find all challenged claims unpatentable (as detailed in Section II) without need to address the unrelated arguments Immersion does raise. In any event, such arguments are erroneous and invite legal error.

**A. Immersion’s Proposed Construction of “*Haptic Effect*” is Unduly Narrow and Excludes Preferred Embodiments, Yet Constitutes Immersion’s Only Response to Pratt’s “Bubble Effect” Embodiment (Ground 1)**

As the Petition explained, Pratt’s “bubble effect” embodiment—simulating the sensation of clicking a button—anticipates the challenged claims including their requirement that a “*haptic effect*” be output in response to a “*haptic output signal*” based on touch and proximity inputs. Petition, 24-26. Indeed, the ’738 patent discloses a comparable “haptic effect meant to confirm ‘pushing’ on a virtual button.” Petition, 24 (quoting EX1001, 11:38-40). Tellingly, Immersion does not contest the Board’s institution-stage determination that “Pratt’s ‘bubble effect’ is analogous to the ‘pushing effect’ disclosed in the ’738 Patent.” ID, 15; *see also* EX1036, 12:17-14:10 (discussing effect disclosed in the ’738 Patent and explaining it indicates a “press has been registered”).

Immersion instead proposes a hopelessly strained and unduly narrow construction under which the ’738 Patent’s “pushing effect” embodiment (i.e., as disclosed in column 11, lines 38-40) would not be covered by even the ’738 Patent’s independent claims—notwithstanding that they are virtually identical to the claims as originally filed.<sup>7</sup> “[H]ighly persuasive’ evidence” would be necessary to read

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<sup>7</sup> The only change is immaterial—it substituted “touch-sensitive device” for “touch-sensitive input device.” EX1002, 155-157.

such independent claims as “excluding a preferred embodiment.” *CUPP Computing AS v. Trend Micro Inc.*, 53 F.4th 1376, 1381 (Fed. Cir. 2022); *see also Google LLC v. EcoFactor, Inc.*, 92 F.4th 1049, 1058 (Fed. Cir. 2024) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification”) (citation omitted). Yet Immersion offers no such evidence.

Immersion instead merely theorizes that “*haptic effect*” should be construed as “a single, **unmodified** haptic effect that is based on the proximity sensor signal and the touch sensor signal.” POR, 19. Immersion argues in particular that the “haptic effect as claimed is a single haptic effect that has **not yet been modified or combined with another haptic effect.**” POR, 20; *see also id.*, 3 (asserting that ’738 Patent’s “objectives” are “to generate a single primary haptic effect”). Yet as the ’738 Patent explains:

[P]rocessor 102 may be configured to output a particular haptic effect associated with a particular control on a user interface element displayed on the touch sensitive surface 116. Such a haptic effect may further be modified or combined with another haptic effect based on the proximity sensor signal. In some embodiments, **the haptic effect can include one or more haptic effects.** For example, the haptic effect can include a haptic effect meant to confirm “pushing” on a virtual button

EX1001, 11:32-40.

Immersion focuses on the “modified or combined” language and says such “modified or combined” effects are “not the **original** haptic effect that is claimed in Claim 1.” POR, 21. Instead, Immersion dismisses a “modified or combined” effect as a “**secondary** haptic effect...outside the scope of” the challenged claims. POR, 21 (“An example of this secondary haptic effect is ‘pushing’ on a virtual button.”).

But the ’738 Patent draws no such distinction between “original” versus “secondary” haptic effects, and the claims broadly recite a generic “*haptic effect*.” Moreover, the above-quoted passage never suggests that a “*haptic effect*” that is modified or combined with another effect somehow is no longer a “*haptic effect*.”

Regardless, Immersion’s focus on the “modified or combined” language leaves entirely unaddressed the specification’s clear teaching that the haptic effect “**can include one or more haptic effects**,” and its identification of the “pushing” effect as an example of such a haptic effect. EX1001, 11:38-40. The patent makes plain that a single haptic effect can itself include multiple haptic effects.

This understanding of “*haptic effect*” is consistent with the remainder of the specification, which emphasizes that a “*haptic effect*” may simply be a **sensation** a user experiences. See, for example:

- EX1001, 5:19-23 (“[H]aptic output device 118 is configured to output a **haptic effect comprising**, for example, a vibration, a

squeeze, a poke, a change in a perceived coefficient of friction, a simulated texture, **a stroking sensation....**")

- *Id.*, 6:15-17 ("Varying the levels of attraction between the object and the conducting layer can **vary the haptic effect perceived by a user.**")
- *Id.*, 9:59-62 ("The dual proximity sensor and haptic actuator shown in FIGS. 2A and 2B can be used **to provide a variety of haptic effects.** For example, the actuator 202 may be used **to provide a static electrostatic friction sensation.**")

The '738 Patent likewise repeatedly discloses that the "haptic effect" may be a "vibration." *E.g.*, *id.*, 10:65. By Immersion's own characterization, a "vibration" is a "sensation." EX1037, ¶3 ("**Haptic effects** (such as tactile or touch feedback) can be produced by actuators, or motors, which create a **vibration**, jolt, pulse, spatial texture, or other **physical sensation.**"); *see also* EX1036 (Welch Depo. Tr.), 8:12-17 (explaining that haptic effects can encompass "the sensations you might feel"); Welch-Reply, ¶¶11-16.

Accordingly, in the context of the '738 Patent, a haptic effect encompasses a sensation experienced by the device user. This tracks Immersion's own emphasis that the claimed invention "provides a more intuitive **experience** for users

interacting with touchscreen devices.” POR, 1 (citing EX1001, 2:54-67); Welch-Reply, ¶17.

To be clear, a “haptic effect” in the context of the ’738 Patent is not **limited** to a sensation. *See* EX1036 (Welch Depo. Tr.), 21:12-14 (noting that patent uses “haptic effect” in “different ways”). Such “varied use” of “*haptic effect*” reflects “the breadth of [the] term rather than providing a limiting definition.” *Anchor Wall Sys. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1308 (Fed. Cir. 2003). Accordingly, the Board need not determine the “outer boundary” construction of “*haptic effect*,” as the term plainly **encompasses** a sensation experienced by the device user.<sup>8</sup>

Pratt’s bubble-effect embodiment anticipates the identified claims because the sensation experienced by the user depends on signals from both Pratt’s proximity sensor and Pratt’s touch sensor—thereby providing the intuitive experience of simulating a “clicking functionality.” EX1006, ¶¶49-51; *see also* EX1004, ¶¶141-147; EX1036, 12:17-14:10. As the Board explained, “Pratt’s ‘bubble’ effect would appear to be a different sensation to the user if pre-charging did not happen, and that pre-charging relies on the proximity sensor.” ID, 15.

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<sup>8</sup> The Board indeed need not address claim construction at all. *See supra* §II.

Immersion never denies this and instead merely asserts that “the experience of the user does not define the haptic effect.” POR, 33 (citing Akl, ¶92). But that is flatly wrong. As detailed above, the ’738 Patent repeatedly explains that the physical “sensation” experienced by a user **can** constitute the “haptic effect.” *E.g.*, EX1001, 5:19-23, 6:15-17, 9:59-62.

Immersion and its expert Dr. Akl contradict these disclosures—rendering Immersion’s claim construction argument and Dr. Akl’s testimony irrelevant. *Homeland Housewares v. Whirlpool*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) (“[W]e must disregard the testimony of an expert that is plainly inconsistent with the record....”); *Anascape, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1339 (Fed. Cir. 2010) (testimony “cannot override” disclosures); *see also Google LLC v. Flypsi, Inc.*, IPR2023-00360, Paper 33 at 43 (July 31, 2024) (giving “little weight” to Dr. Akl’s testimony, which was “inconsistent with” a reference’s “express teachings”).

The ’738 Patent’s emphasis that the “haptic effect” may be a “sensation” experienced by the user likewise belies Immersion’s suggestion that a “haptic effect” as claimed must be a “single, unmodified haptic effect” (POR, 28) that “has *not yet* been modified or combined with another haptic effect” (POR, 20) (emphasis original). Indeed, **any** given “haptic effect” can be decomposed into smaller components. Welch-Reply, ¶21. Yet “the experience for users interacting with

touchscreen devices” (POR, 1) is the same regardless of whether and how the effect is subdivided (Welch-Reply, ¶21).

Indeed, a “*haptic effect*” is based on a data stream that can be represented in pulse code modulation (PCM) format. Welch-Reply, ¶22 (discussing EX1039). However, under Immersion’s theory, only A as shown below—not the combination of “B” and “C”—would constitute a “*haptic effect*” as claimed.

|            |                                                        |
|------------|--------------------------------------------------------|
| <b>A</b>   | <b>01101000011010011110010101000011100011100011100</b> |
| <b>B+C</b> | <b>01101000011010011110010101000011100011100011100</b> |

Yet B together with C constitutes the exact same data stream and yields the exact same sensation for users. Welch-Reply, ¶¶23-27. For example, “signal 510” in EX1040 (an Immersion published application) generates the same sensation whether presented as an ostensibly “primary” haptic effect or instead the “combination” of “signal 500 and signal 520.” Welch-Reply, ¶¶28-29; EX1040, ¶49 (“[A] haptic effect may be based on a combination of a random or pseudo-random signal and another signal. For example, as illustrated in FIG.5D, a haptic effect may be based on signal 510, which is a combination of the random or pseudo-random signal 500 and signal 520 which may be a periodic signal.”):

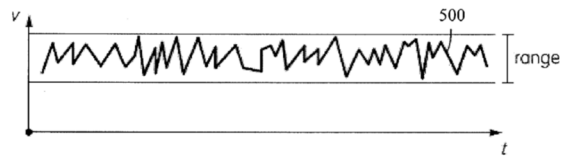


FIG. 5C

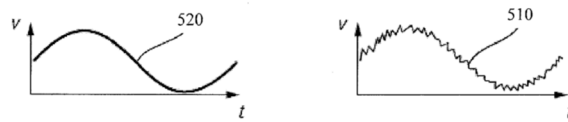


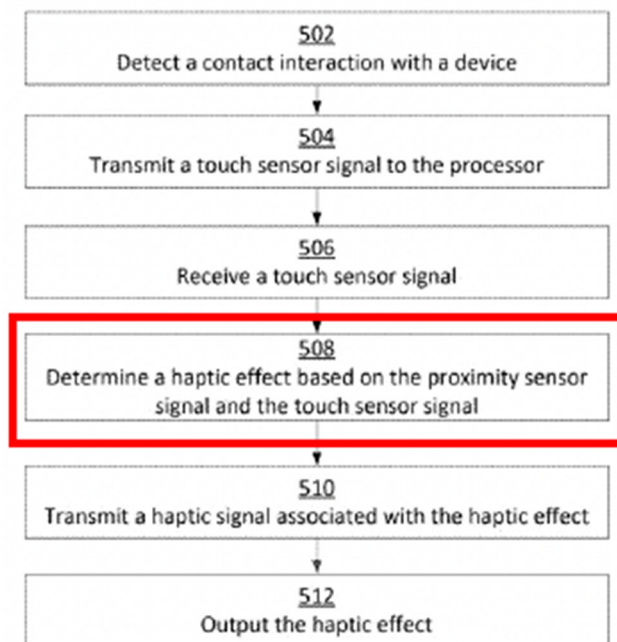
FIG. 5D

It would be wholly arbitrary to distinguish B+C from A (or alternatively 500 and 520 from 510) on the ground that the former have been “combined” whereas the latter reflect “a single haptic effect that has not yet been modified or combined with another haptic effect.” Welch-Reply, ¶29. It would likewise contradict Immersion’s own acknowledgment that the ’738 Patent offers “a more intuitive **experience** for users” (POR, 1). Users would have the exact same experience regardless of whether it is described as “B+C” (or “500+520”) rather than “A” (or “510”). Welch-Reply, ¶30; *see also* EX1041, ¶49 (“[T]he haptic effect may be generated by generating two haptic effects....A user may perceive a combination of the two haptic effects as a single haptic effect.”). Indeed, both signals would be identical if measured with an oscilloscope. Welch-Reply, ¶30. Immersion’s theory is akin to asserting that an

orange liquid is not actually orange if it results from combining red and yellow liquids. Welch-Reply, ¶31.

The '738 Patent itself repeatedly stresses the logical reality that “**the haptic effect can include one or more haptic effects**” (EX1001, 10:47-8 & 11:37-38)—just like “a color” can include one or more colors. *See also id.* at 5:26-28 (“[S]ome haptic effects may use multiple haptic output devices 118 of the same or different types in sequence and/or in concert.”); Welch-Reply, ¶32.

Immersion repeatedly cites Figure 5 while wrongly assuming that it necessarily reflects “a single, unmodified haptic effect”:



POR, 19-20 (annotation added by Immersion). But as previously explained, the '738 Patent stresses that the “*haptic effect*” can be a **sensation** experienced by the user.

Accordingly, a device could practice Figure 5 by (1) “determin[ing]” a sensation for the user to experience “based on the proximity and touch sensor signals,” and (2) transmitting a “haptic signal” associated with that sensation. Welch-Reply, ¶33. And such signal may include multiple discrete components in combination—for example, “B+C” as indicated above. Accordingly, as the Board rightly reasoned for institution purposes, Pratt’s “bubble” effect anticipates the claims even if “the pre-charging portion of the effect could fairly be partitioned out as a separate and distinct haptic effect from the portion of the effect that occurs after the touch.” ID, 15.

The Choe reference (EX1015) considered during prosecution is materially different from Pratt’s “bubble” effect, and Immersion mischaracterizes the Board’s analysis from the prosecution appeal to suggest otherwise (POR, 22). The Examiner had relied on two different haptic effects 225 and 226 disclosed in two separate figures. EX1002, 1087-1088. Nothing in Choe’s relevant embodiment suggested that 225 and 226 could or should be combined such that users experienced a single sensation; indeed, the effects instead served completely different purposes. EX1002, 1088; EX1015, ¶¶136-138. The Examiner had nevertheless cited generic language elsewhere in the specification concerning synthesized vibration effects. EX1002, 1088, EX1015, ¶52. As Immersion rightly stressed during prosecution, however, Choe never “suggest[s] that haptic effects [225 and 226] are combinable.” EX1002, 1075.

On appeal the Board agreed that Choe’s generic disclosure “does not disclose that the specific signals 225 and 226 described by Choe in a separate embodiment are combined.” EX1002, 1091. The Board thus reversed the Examiner’s **anticipation** finding. *Id.* Notably, and contrary to what Immersion alleges, the Board never “agreed that a disclosure of combining haptic effects was insufficient to anticipate Claim 1” (POR, 22)—the Board simply found no such disclosure in Choe.

In contrast to Choe’s disclosure, Pratt’s bubble effect provides “a mechanical compression effect.” EX1006, [0050]. And Pratt achieves this singular sensation—described as “a bubble effect generation operation”—based on **both** proximity and touch signals. Welch, ¶145 (quoting EX1006, [0049]). Further, Pratt describes the bubble effect as “proximity-based deflection” even though the “haptic effect” is “initiat[ed]” once “the touch sensor determines that the user’s finger has made contact.” EX1006, [0050]-[0051]; Welch, ¶145. As the Board rightly noted and Immersion does not dispute, “Pratt’s ‘bubble effect would appear to be a different sensation to the user if pre-charging did not happen, and that pre-charging relies on the proximity sensor.” ID, 15. By contrast, Choe’s effects 225 and 226 are separate and independent.

For these reasons, Immersion’s claim construction argument fails and Pratt’s “bubble effect” embodiment anticipates claims 1-3, 5-6, 14-15, and 19.

## **B. Pratt Was Ready for Improvement Based on Ku (Ground 2)**

As the Petition explained, it would have been obvious to program Pratt's device to implement Ku's Figures 7 and 12 while sending a single haptic output signal to generate the combined vibration 715. Petition, 46-55. Immersion's only responses are (1) that the combination allegedly "fails to disclose the claimed 'haptic effect'" (POR, 45-50) and (2) that POSAs allegedly "would not have been motivated to combine Pratt and Ku" (POR, 50-54).

Aside from depending on Immersion's unduly narrow claim construction (*see supra* III.A), Immersion's first argument simply ignores Valve's evidence explaining why it would have been obvious to implement vibration 715 as a single "haptic effect" output in response to a single haptic command. This is the same oversight discussed in *supra* II.B concerning Ground 3.

Immersion's second argument invites further legal error. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1004 (Fed. Cir. 2016) (affirming Board's motivation-to-combine finding where POSA "could have seen the advantages of applying the teachings" of one reference to another). As the Petition explained, Pratt was "ready for improvement" based on Ku because both references disclose devices with a user interface including multiple icons, but Pratt does not address the problem Ku discusses: "distinguish[ing] between different types of touch signals and proximity signals" depending on where they are detected relative to the on-screen

icons. Petition, 47-50. POSAs would have recognized “such an alert as desirable to indicate to users whether they touched the icon they intended to touch.” Petition, 50 (citing Welch, ¶212).

Neglecting this explanation, Immersion merely reasons that “[n]othing about Ku’s disclosure...relates to reducing latency” and similarly that Valve’s explanation concerning the combination does not concern “reducing latency.” POR, 51-52. But Pratt itself disclosed means for reducing latency. Pratt was ready for improvement for the **separate** reason that it disclosed multiple icons without disclosing how to indicate whether users touched the intended one. As the Board rightly noted and Immersion ignores, the law does not require identifying some specific “deficiency” in Pratt. ID, 25-26; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[I]f a technique has been used to improve one device, and a [POSA] would recognize it would improve similar devices in the same way, using the technique is obvious unless its application is beyond his or her skill.”). Nor does Immersion otherwise dispute that Pratt-Ku entails “the predictable use of prior art elements according to their established functions.” *Id.*

### **C. POSAs Would Have Incorporated Jiang’s EMP Sensor Into Ku (Ground 4)**

As Valve explained, POSAs would have been motivated to implement Ku’s touch screen with Jiang’s EMP sensor as an actuator—thereby reducing power while

enhancing sensation and improving resolution. Petition, 78-79 (citing Welch, ¶¶295, 297-299).

While nominally asserting that POSAs “would not have been motivated to combine” Ku and Jiang (POR, 54 (citing Akl, ¶¶120-121)), Immersion and Dr. Akl<sup>9</sup> never dispute the specific benefits Jiang’s EMP sensor offered. Immersion instead stresses that Valve’s “reason...for combining the Ku and Jiang references does not relate to the use of both proximity and touch signals.” POR, 55. But this is irrelevant. When assessing obviousness, “neither the particular motivation nor the avowed purpose of the patentee controls.” *KSR*, 550 U.S. at 419.

Separately, Immersion asserts that Ku-Jiang “does not address the key disclosure” purportedly “missing from Ku.” POR, 55. This merely reprises Immersion’s strawman argument concerning Ku itself. Valve’s Petition explained why Ku renders the identified claims **obvious** and in particular why it would have been **obvious** to generate a single haptic output signal to generate Figure 12(d)’s vibration 715. *See supra* §II.B (concerning Ground 3). Ground 4 indeed relies on Ground 3 for purposes of the disputed “*haptic effect*” and “*haptic output signal*” claim elements. *See* Petition, 81-82.

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<sup>9</sup> Dr. Akl falsely asserts that Jiang was considered during prosecution. Akl, ¶118.

#### IV. CONCLUSION

Claims 1-6, 14-15, and 19 are unpatentable.

Respectfully submitted,  
Valve Corp.

Date: 03-31-2025

By: /Charles T. Steenburg /  
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**CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)**

I certify that on March 31, 2025, a copy of the foregoing document, including any exhibits or appendices filed therewith, is being served via electronic mail, as previously consented to by Patent Owner, upon the following:

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### **CERTIFICATE OF WORD COUNT**

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing **Petitioner's Reply to Patent Owner Response** contains 5,596 words excluding a table of contents, a table of authorities, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioner has relied on the word count feature of the word processing system used to create this paper in making this certification.

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