

United States Court of Appeals for the Federal Circuit

MOBILEMEDIA IDEAS LLC,
Plaintiff-Cross-Appellant

v.

APPLE INC.,
Defendant-Appellant

2014-1060, 2014-1091

Appeals from the United States District Court for the District of Delaware in No. 1:10-cv-00258-SLR-MPT, Judge Sue L. Robinson.

Decided: March 17, 2015

STEVEN M. BAUER, Proskauer Rose LLP, Boston, MA, argued for plaintiff-cross-appellant. Also represented by JUSTIN J. DANIELS, SAFRAZ ISHMAEL, JOHN M. KITCHURA, JR., JOHN E. ROBERTS.

GEORGE ALFRED RILEY, O'Melveny & Myers LLP, San Francisco, CA, argued for defendant-appellant. Also represented by LUANN LORAIN SIMMONS, MELODY DRUMMOND HANSEN, TIM D. BYRON; XIN-YI ZHOU, Los Angeles, CA.

Before TARANTO, BRYSON, and CHEN, *Circuit Judges*.

CHEN, *Circuit Judge*.

This is a patent infringement case relating to four patents owned by plaintiff and cross-appellant MobileMedia Ideas LLC (MobileMedia). Defendant and appellant Apple Inc. (Apple) appeals from a final judgment of the United States District Court for the District of Delaware finding claim 73 of U.S. Patent No. 6,427,078 (the '078 patent) and claim 23 of U.S. Patent No. 6,070,068 (the '068 patent) to be infringed and not invalid. MobileMedia cross-appeals from the district court's final judgment finding claims 5, 6, and 10 of U.S. Patent No. 6,253,075 (the '075 patent) and claims 2–4 and 12 of U.S. Patent No. RE 39,231 (the '231 patent) not to be infringed, and claims 5, 6, and 10 of the '075 patent to also be invalid.

As to Apple's appeal, we (i) affirm the district court's judgment that claim 73 of the '078 patent is not invalid, (ii) reverse the district court's judgment that claim 73 of the '078 patent is infringed, and (iii) reverse the district court's judgment that claim 23 of the '068 patent is not invalid. As to MobileMedia's cross-appeal, we (i) affirm the district court's judgment that claims 5, 6, and 10 of the '075 patent are invalid, (ii) vacate the district court's judgment that claims 2–4 and 12 of the '231 patent are not infringed because the judgment is based on an erroneous claim construction, and (iii) remand to the district court for further proceedings.

I. BACKGROUND

MobileMedia is a company formed by MPEG LA, LLC, Nokia Corporation (Nokia), and Sony Corporation of America. MobileMedia filed suit against Apple, asserting infringement of sixteen patents by various Apple products. Apple responded with several affirmative defenses, alleging, among other things, invalidity of all sixteen patents, and also counterclaimed for declaratory judg-

ments of noninfringement. The district court bifurcated the issues of willfulness and damages for purposes of discovery and trial. During the course of the ensuing litigation, the parties stipulated to a dismissal of the claims and counterclaims related to two patents, and MobileMedia deferred the resolution of four other patents to a later phase of the litigation. The district court then granted Apple's summary judgment motions of noninfringement or invalidity for five of the remaining patents, including Apple's summary judgment motion of noninfringement of claims 2–4 and 12 of the '231 patent. *MobileMedia Ideas LLC v. Apple Inc.*, 907 F. Supp. 2d 570, 627–28 (D. Del. 2012) (*MobileMedia SJ*). MobileMedia then selected claims 5, 6, and 10 of the '075 patent, claims 23 and 24 of the '068 patent, and claim 73 of the '078 patent to assert at trial against Apple and its accused iPhone 3G, iPhone 3GS, and iPhone 4 products. *MobileMedia Ideas LLC v. Apple Inc.*, 966 F. Supp. 2d 439, 447 (D. Del. 2013) (*MobileMedia JMOL*). At trial, Apple argued that its accused iPhones did not infringe any of the asserted claims and that certain combinations of prior art references rendered each of the asserted claims invalid as obvious under 35 U.S.C. § 103. The jury returned a verdict finding that (i) Apple's accused products directly infringed the asserted claims, (ii) Apple did not induce infringement of the asserted claims, and (iii) none of the asserted claims were invalid as obvious. *Id.*

After the district court entered a judgment consistent with the jury's verdict, Apple renewed a previously-filed motion for judgment as a matter of law (JMOL) under Rule 50(b) of the Federal Rules of Civil Procedure (FRCP), and in the alternative, moved for a new trial under FRCP 59(a). *Id.* The district court granted Apple's JMOL motion of (i) noninfringement and invalidity of all asserted claims of the '075 patent, *id.* at 457–59, and (ii) invalidity of claim 24 of the '068 patent, *id.* at 464–68. The district court denied Apple's motion with respect to (i)

invalidity of claim 23 and noninfringement of claims 23 and 24 of the '068 patent, *id.* at 464–68, and (ii) invalidity and noninfringement of claim 73 of the '078 patent, *id.* at 472–74. The district court also denied Apple's motion for a new trial, *id.* at 474–77, and entered a judgment consistent with its partial grant of Apple's JMOL motion. Joint Appendix (J.A.) 1–5. Both parties agree that the district court's judgment is final except for an accounting, which includes the determination of damages and willful infringement. See *Robert Bosch LLC v. Pylon Mfg. Corp.*, 719 F.3d 1305, 1320 (Fed. Cir. 2013) (en banc).

Apple now appeals the district court's denial of its JMOL motion of noninfringement and invalidity of claim 73 of the '078 patent and claim 23 of the '068 patent. In particular, Apple challenges (i) the district court's claim construction of two means-plus-function limitations in claim 73 of the '078 patent and one limitation in claim 23 of the '068 patent, (ii) the district court's determination that substantial evidence supports the jury's finding that a person having ordinary skill in the art would not have been motivated to combine two references to render claim 73 of the '078 patent obvious, and (iii) the district court's conclusion that claim 23 of the '068 patent would not have been obvious in view of a prior art reference, together with the common knowledge of one skilled in the art.

For its part, MobileMedia cross-appeals (i) the district court's grant of Apple's JMOL motion of noninfringement and invalidity of claims 5, 6, and 10 of the '075 patent, and (ii) the district court's grant of summary judgment of noninfringement of the '231 patent. In particular, MobileMedia challenges (i) the district court's finding that MobileMedia failed to present evidence that Apple's accused iPhones met a required limitation of the asserted claims of the '075 patent, (ii) the district court's conclusion that no reasonable juror could find the asserted claims of the '075 patent to be nonobvious over the prior art, and (iii) the district court's claim construction of a means-plus-

function limitation in the asserted claims of the '231 patent.

Because a party may appeal a judgment that is final except for an “accounting,” we have jurisdiction over both Apple’s appeal and MobileMedia’s cross-appeal under 35 U.S.C. § 1292(c)(2).

II. DISCUSSION

We review decisions on motions for summary judgment and JMOL under the law of the regional circuit. *Energy Transp. Grp. Inc. v. William Demant Holding A/S*, 697 F.3d 1342, 1350 (Fed. Cir. 2012). The Third Circuit reviews grants and denials of motions for summary judgment *de novo*, applying the same standard of review as the district court. *Gonzalez v. Sec’y of Dep’t of Homeland Sec.*, 678 F.3d 254, 257 (3d Cir. 2012). Similarly, the Third Circuit reviews district court JMOL decisions *de novo*. *Pitts v. Delaware*, 646 F.3d 151, 155 (3d Cir. 2011). We must view the record in the light most favorable to the verdict winner, drawing all reasonable inferences in its favor. *Starceski v. Westinghouse Elec. Corp.*, 54 F.3d 1089, 1095 (3d Cir. 1995). Only if the record is “critically deficient of the minimum quantum of evidence” on which a jury could reasonably base its verdict does the Third Circuit affirm a grant of JMOL. *Pitts*, 646 F.3d at 155 (internal citation omitted). JMOL, however, may be appropriate when there is a purely legal basis required for reversal that does not depend on rejecting the jury’s findings on the evidence at trial. *Acumed LLC v. Advanced Surgical Servs., Inc.*, 561 F.3d 199, 211 (3d Cir. 2009).

III. APPLE’S APPEAL

A. The '078 patent (camera phone)

The '078 patent is directed to a “small-sized, portable and hand-held work station,” such as a notebook computer, that includes a camera unit, a data processing unit, a

display, a user interface, and at least one memory unit. '078 patent, Abstract. The specification describes how this “notebook computer” uses the attached camera unit to take a picture of items such as business cards, handwritten text, and figures. *Id.* at 5:15–21 (business cards), 5:43–45 (circles or lines), and 5:37–38 (handwritten text). Software applications, such as graphics and optical character recognition (OCR) software, convert the captured images into text or rudimentary graphical data for subsequent use by the notebook computer. *Id.* at 5:21–58. According to the specification, adding a camera unit to the notebook computer allows a user to “scan different written and/or drawn information into the memory of the notebook computer quickly and easily.” *Id.* at 6:17–20. A “digitizer pad” may also be part of the notebook computer, which uses “known technique[s]” to recognize input from a pen and convert figures drawn on the digitizer pad into bitmap images. *Id.* at 7:6–10.

The notebook computer can include a cellular mobile phone unit, which uses “conventional” analog modem or digital GSM technology. *Id.* at 3:37–49. Coupled with a miniature speaker and microphone, the GSM interface allows the notebook computer to “be used in the same way as a conventional hand-held telephone.” *Id.* at 3:49–53. The notebook computer can also transmit SMS (Short Message Service) and e-mail messages through its GSM interface. *Id.* at 8:7–17.

Although the invention is described throughout the specification as a “notebook computer,” the specification also contemplates that the device “may also be a radiotelephone.” *Id.* at 8:18–20. Claim 73 of the '078 patent recites such an embodiment of the claimed invention:

73. A portable cellular mobile phone comprising:
a built in camera unit for obtaining image information;

a user interface for enabling a user to input signals to operate the camera unit;

a display for presenting image information obtained by the camera unit;

a microprocessor adapted to control the operations of the camera unit in response to input signals from the user interface, and to process image information received by the camera unit; and

means, coupled to said microprocessor, for transmitting image information processed by said microprocessor to another location using a radio frequency channel; and

wherein the camera unit comprises:

optics for obtaining image information;

an image sensor for obtaining image information; and

means for processing and for storing at least a portion of the image information obtained by the camera unit for later recall and processing.

Id. at 16:1–19 (emphasis added).

1. Invalidity

Apple contends that the district court erred by denying its JMOL motion that the '078 patent is invalid as obvious over two references: Japanese patent application publication no. H6-133081 (Kyocera) and U.S. Patent No. 5,550,646 (Lucent). Kyocera discloses a mobile phone with a built-in camera unit, a user interface, and a viewfinder display. Kyocera, Abstract; J.A. 57596. The camera unit includes an image sensor that captures image data through a lens. Kyocera, ¶ 10; J.A. 57601. Lucent discloses a portable phone with an integrated camera unit, a keypad interface, and an LCD display. Lucent, 3:21–33, 4:1–31. The Lucent device includes a micropro-

cessor that controls camera operations, *id.* at 3:24–29, and processes pictures in order to “enhance presentability,” *id.* at 3:47–48. The device stores these pictures in RAM memory. *Id.* at 4:32–33, 4:40–42, and 6:46–62. The device can then transmit the pictures using a “built-in cellular telephone” and fax modem. *Id.* at 2:4–5, 2:61–66, and 5:26–47.

During trial, Apple contended that the Kyocera mobile phone, together with the microprocessor controlling the Lucent device, disclose all limitations of claim 73.¹ Apple’s expert further testified that the two references discuss similar technologies, and a person having ordinary skill in the art—someone with a Bachelor of Science degree in electrical engineering, computer engineering, or the equivalent, and between two and four years of experience in the field²—would have understood the benefits and cost advantages of combining the references. *MobileMedia JMOL*, 966 F. Supp. 2d at 471. MobileMedia responded with testimony from its expert that such a skilled artisan would not have been able to combine the Lucent microprocessor with the Kyocera mobile phone during the relevant time frame due to the “complexity and sophistication of software and hardware integration and development.” *Id.* MobileMedia did not present evidence of objective indicia of nonobviousness. J.A. 19477–78.

¹ Apple also argued at trial that Kyocera anticipated claim 73 of the ’078 patent. MobileMedia contended that Kyocera did not disclose a microprocessor or means for storing captured images for later recall. The jury found that Kyocera did not anticipate claim 73, a finding which Apple does not appeal.

² The parties agreed on the level of ordinary skill in the art. *Compare* J.A. 20464 (testimony from MobileMedia’s expert), *with* J.A. 20285–86 (testimony from Apple’s expert).

The district court determined that there was no material dispute between the parties at trial that Kyocera and Lucent together disclose all the limitations of claim 73. *MobileMedia JMOL*, 966 F. Supp. 2d at 471. The district court also found that the “jury implicitly chose to believe” the testimony of MobileMedia’s expert instead of the testimony of Apple’s expert regarding the alleged motivation to combine the two references. *Id.* at 472. Therefore, the district court found that substantial evidence supported the jury’s verdict that the ’078 patent was not invalid, and denied Apple’s JMOL motion.

On appeal, Apple argues that the combination of the Kyocera and Lucent references is merely the predictable use of prior art elements according to their established functions, and therefore would have been obvious. First, Apple contends that Lucent discloses a microprocessor that performs signal processing to “enhance presentability” of captured pictures, and that its expert testified that a skilled artisan would have recognized that modifying Kyocera with Lucent provides the benefit of improved picture quality. Second, Apple asserts that the Lucent microprocessor can be programmed to provide functionality similar to that of the Kyocera mobile phone, and that its expert testified that skilled artisans would have understood the cost advantages of using a programmable microprocessor for the relevant operations of the Kyocera mobile phone. Apple also notes that Lucent discloses a commercially-available, off-the-shelf microprocessor, and that its expert testified that disclosure of such an ordinary, commercially-available processor would have motivated those of skill in the art to try—and to expect success from using—the Lucent microprocessor with the Kyocera mobile phone.

A patent is invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter would have been obvious at the time the invention

was made to a person having ordinary skill in the art. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406–07 (2007). Obviousness is a question of law based on underlying facts, as set forth in *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17 (1966). The *Graham* factors are (i) the scope and content of the prior art, (ii) the differences between the prior art and the claimed invention, (iii) the level of ordinary skill in the field of the invention, and (iv) any relevant objective considerations of nonobviousness. See *id.* at 17–18. What a particular reference discloses is a question of fact, as is the question of whether there was a reason to combine certain references. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1303 (Fed. Cir. 2010). Thus, although we review any underlying findings of fact by the jury—whether explicit or implicit—for substantial evidence, the ultimate determination of obviousness is a question of law we review *de novo*. *Bos. Scientific Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 990 (Fed. Cir. 2009).

The existence of a motivation to combine the Kyocera and Lucent references was contested by the parties at trial. Thus, while Apple may have presented some evidence to support its position that a skilled artisan would have been motivated to combine Kyocera with Lucent, this alone does not demonstrate that the jury's verdict was unsupported by substantial evidence.

At trial, MobileMedia's expert focused on Kyocera's failure to teach a skilled artisan how to implement the claimed "microprocessor adapted to control the operations of the camera unit in response to input signals from the user interface, and to process image information received by the camera unit." J.A. 20463; '078 patent, 16:7–10. MobileMedia's expert acknowledged that had the claims merely required a processor, "it [would have been] obvious to put one there," but testified that the surrounding claim limitations required the microprocessor to "play[] multiple roles" and "make [the claimed components] all work

together,” which was “a real challenge” in the art at the time of the claimed invention. J.A. 20463–64, 204637. MobileMedia’s expert noted that Nokia, which at the time “was at the very forefront of innovation in the cellphone industry,” needed two years to develop a product with a microprocessor that provided the claimed functionality between a phone and camera. J.A. 20467. In view of these considerations, MobileMedia’s expert testified that it would not have been obvious for one of skill in the art at the time the invention was made (1994), even with knowledge of the Lucent microprocessor, to combine the Lucent microprocessor with the Kyocera mobile phone in a manner that satisfied the limitations of claim 73 of the ’078 patent. J.A. 20466–67.

As the Supreme Court noted in *KSR*, even when a technique has been used to improve a device, and a skilled artisan would recognize that it could improve other devices in the same way, using that technique may not be obvious if its actual application is beyond his or her level of skill. 550 U.S. at 417. Here, MobileMedia’s expert testified that integrating the Lucent microprocessor to control the camera of the Kyocera mobile phone in the manner required by the asserted claims would be beyond the technical ability of a skilled artisan. This provided the jury with a reasonable basis for finding that the claimed invention would not have been obvious to one of ordinary skill in the art at the relevant timeframe. Although Apple’s expert offered a differing opinion, when there is conflicting testimony at trial, and the evidence overall does not make only one finding on the point reasonable, the jury is permitted to make credibility determinations and believe the witness it considers more trustworthy. See *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1362 (Fed. Cir. 2012). Here, the jury credited the testimony of MobileMedia’s expert over the testimony of Apple’s expert. *MobileMedia JMOL*, 966 F. Supp. 2d at 472. Where there is substantial evidence

for a reasonable jury finding, it is not our function to second guess or reevaluate the weight given to that evidence. *See, e.g., Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1192 (Fed. Cir. 1998). Thus, we agree with the district court that substantial evidence supports the jury's finding that one of skill in the art would not have been motivated to combine the Lucent and Kyocera references to arrive at the claimed invention. Consequently, the district court did not err by denying Apple's motion for JMOL of invalidity.

2. Noninfringement

Apple also contends that the district court erred in construing two means-plus-function limitations in claim 73. *MobileMedia SJ*, 907 F. Supp. 2d at 601. Apple contends that the jury's finding of infringement was based on these erroneous constructions, and that when construed correctly, no reasonable jury could find that Apple's accused iPhones infringe claim 73 of the '078 patent.

Both parties agree that claim 73 includes two limitations that invoke 35 U.S.C. § 112 ¶ 6³: a “means . . . for transmitting image information” and a “means for processing and for storing” this image information. Both parties also agree that the “image information” processed and transmitted by the two “means” must be obtained from the camera unit. Appellant's Reply Br. 4 n.1; *see also* J.A. 28470–71.

We turn first to the “means for processing and storing.” Apple argues that the district court erred in identi-

³ Paragraph 6 of 35 U.S.C. § 112 was replaced with newly designated § 112(f) when § 4(c) of the America Invents Act (AIA), Pub. L. No. 112-29, took effect on September 16, 2012. Because the applications resulting in the patents at issue in this case were filed before that date, we will refer to the pre-AIA version of § 112.

ifying the structure disclosed in the '078 patent's specification corresponding to the "means for processing and for storing" an image from the camera as *any* image processing unit in the overall device, rather than the processing and memory units within the camera unit. Apple contends that the language of the claim expressly requires the storing and processing of image data by the camera to be performed by the camera's own processor and memory unit, and not by the notebook computer's general purpose central processor. Apple also notes that the specification only links the functions of storing and processing images captured by the camera with the camera's own processor and memory units.

MobileMedia responds that the "means for processing and storing" are not limited to the camera unit's processor and memory units because nothing in the specification indicates that these separate units cannot be used for other purposes. Although conceding that the claimed device includes a central processor that is separate from the processor within the camera unit, MobileMedia argues that the means for processing images captured by the camera can be either of the disclosed processors. Similarly, for the memory units, MobileMedia contends that because nothing in the specification suggests that the camera's memory units function solely for the purpose of the camera, the means for storing images captured by the camera can be the memory units within the camera unit or the device's separate system-level memory unit.

We review the district court's claim construction here *de novo* because it relied only on evidence intrinsic to the '078 patent. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). Under 35 U.S.C. § 112 ¶ 6, a means-plus-function claim "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." A disclosed structure is a "corresponding structure" only if the specification or prosecution history clearly links or associates that

structure to the function recited in the claim. *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997).

Claim 73 recites a portable cellular mobile phone comprising five components: (i) a built in camera unit, (ii) a user interface, (iii) a display, (iv) a microprocessor adapted to control the operations of the camera unit, and (v) a means for transmitting image information over a radio frequency channel. '078 patent, 16:1–13. Claim 73 further recites that the camera unit comprises (i) optics for obtaining image information, (ii) an image sensor, and (iii) a means for processing and storing at least a portion of the image information obtained from the camera unit for later recall and processing. *Id.* at 16:14–19. In short, the language of claim 73 makes clear that the “means for processing and storing” is part of the *camera unit*, not the overall device.

The components of the claimed device are diagrammed in Figure 3. *Id.* at 2:27–28. Figure 3 indicates that the device includes both a “data processing unit” with a central “processor 4” and system-level “memory unit 13.” *Id.* at 2:41–42, 2:66–3:5. The “camera unit 14” is a separate and distinct component of the overall device that communicates with the “data processing unit” via “input/output controller 5.” *Id.* at 3:13–14. The specification explains that the structure of the camera unit “conforms to the block diagram shown in Fig. 5” of the '078 patent. *Id.* at 4:23–25. Figure 5 illustrates that the camera unit includes a “camera 14*a* and optics 15*b*, image processing unit 14*c*, [and] battery 21.” *Id.* at 4:23–28. The camera unit’s image processing unit is a “microprocessor 23” and “a number of memory units 24.” *Id.* at 4:29–31, 4:37–41. Thus, consistent with the express language of the claim, the specification indicates that the camera unit’s “microprocessor 23” and “memory units 24” are different than and separate from the device’s central “processor 4” and system level “memory unit 13.” *Id.* at 2:41–42, 2:66–3:5.

A picture taken by the camera unit is “transferred to [its] image processing unit 14c and through its microprocessor 23 to [its] memory unit 24.” *Id.* at 4:53–54. When a user wishes to view the picture, the image information is read from the camera unit’s “memory unit 24” by the camera unit’s “microprocessor 23,” and is then transmitted to the notebook computer’s “processor 4” for display. *Id.* at 4:54–62. The specification emphasizes that it is the *camera unit’s* “[i]mage processing unit 14c [which] processes the image information into a suitable form” to be displayed by the notebook computer. *Id.* at 4:62–63.

The specification thus clearly links two structures to the claimed means for performing the function of processing and storing image information obtained by the camera for later recall: “microprocessor 23” and “memory unit 24,” the processor and memory units within the camera unit. Nowhere in the specification is the claimed function of processing and storing an image captured by the camera unit performed by the device’s separate “processor 4” or system-level “memory unit 13.” *See id.* at 3:18–21, 4:57–62, and 5:17–21 (explaining that later recall of image information captured by the camera unit requires transfer of image information from the camera unit’s memory to the device’s separate central processor and system-level memory). In addition, the specification does not suggest that the camera unit’s processor and memory perform functions beyond the processing and storing of image information for later recall. Indeed, the specification indicates that software for controlling the notebook computer’s other functionality—telephone and facsimile services, e-mail, SMS, and calendar programs—resides in the system-level “memory unit 13,” *not* the camera unit’s “memory unit 24.” *Id.* at 3:54–62.

MobileMedia’s contention that the specification does not expressly limit the function of the camera unit’s microprocessor and memory to processing and storing image information for later recall does not justify the

district court's construction, which erroneously expands the scope of the "means for processing and storing" to include any image processing unit or memory unit. The scope of a means-plus-function limitation is outlined not by what the specification and prosecution history *do not* say, but rather by what they *do* say. As we noted in *Medtronic, Inc. v. Advanced Cardiovascular Systems, Inc.*, the fact that "a structure may perform two functions and that a function may be performed by two structures" is "*irrelevant* in the context of a § 112, paragraph 6 analysis without a clear link or association between the function or functions recited in the means-plus-function limitation and the structure or structures disclosed in the specification for carrying out those functions." 248 F.3d 1303, 1313 (Fed. Cir. 2001) (emphasis added). And MobileMedia identifies no portion of the specification or prosecution history that clearly links any structure to the claimed function of processing and storing image information for later recall other than the camera unit's "microprocessor 23" and "memory units 24."

Accordingly, the structures corresponding to the claimed function of the "means for processing and storing" encompass only "microprocessor 23" and "memory unit 24," the *camera unit's* processor and memory units. Correctly construed, no reasonable jury could conclude that Apple's accused products literally infringe the "means for processing and storing" limitation of claim 73.⁴ Literal infringement of a § 112 ¶ 6 limitation requires that the relevant structure in the accused device perform the identical function recited in the claim and be identical or equivalent to the corresponding structure in the speci-

⁴ MobileMedia did not contend that Apple's accused iPhones infringe the '078 patent under the doctrine of equivalents before the district court, J.A. 8302, and does not do so here on appeal.

fication. *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999). Here, the parties do not dispute that the camera module in Apple’s accused iPhones has no internal memory for storing image data. J.A. 5970–71; J.A. 8914. Thus, the camera module of Apple’s iPhones has no structure corresponding to the function of storing at least a portion of processed image information. Although MobileMedia contends that the “main memory of the iPhone” is the camera unit’s means for storing, J.A. 19632, this “main memory” is not located within the iPhone camera module, which is what claim 73 requires.

Therefore, we reverse the district court’s judgment that Apple infringes claim 73 of the ’078 patent. We need not reach Apple’s alternative noninfringement argument that the district court erred in its construction of the “means . . . for transmitting” limitation in claim 73.

B. The ’068 patent (call handling)

The ’068 patent is directed to the display of call handling options in a menu on a mobile phone’s display screen. ’068 patent, Abstract. Examples of call handling options include “hold” and “disconnect.” *Id.* at 6:14–30. According to the ’068 patent, at the time of the claimed invention, users were required to memorize specific sequences of keys in order to execute call handling options on a mobile phone. *Id.* at 1:29–39. The ’068 patent’s method for displaying a menu of options on the phone’s display screen allows users to select an option from a menu instead of needing to remember different key sequences. *See id.* at Figs. 6, 8–11, and 1:62–67. The specification explains that the mobile phone either displays this menu automatically when it receives an incoming call, or waits to display the menu until the user performs an action, such as when the user presses a key. *Id.* at Fig. 6 and 7:33–37, Figs. 8–9 and 12:42–44 (auto-

matic); *id.* at Fig. 10 and 12:45–52, Fig. 11 and 14:19–38 (user action). Claim 23 of the '068 patent recites:

23. A communicating method for controlling a connecting state of a call into a desired connecting state upon a predetermined operation by a user, comprising the steps of:

displaying processing items [i.e., call handling options] available to the user relative to the call on a display;

selecting and determining a desired processing item out of said processing items displayed on said display by the user operating an input unit; and

controlling the processing items being displayed on said display and controlling the call into a connecting state corresponding to the processing item selected and determined by the operation of said input unit by the user,

wherein said step of controlling the processing items includes displaying said processing items [i.e., call handling options] on said display *when only a single predetermined selection operation is made by the user,*

wherein said step of controlling the processing items includes listing said processing items available to the call on said display for each call.

'068 patent (reexamination certificate), 4:17–37 (emphasis added).

In more plain language, claim 23 recites a method requiring (i) a mobile phone to display call handling options on a menu screen, (ii) the user to select one of these options, and (iii) the mobile phone to execute the call handling option selected by the user. Claim 24 of the '068 patent is identical to claim 23 for most of its limitations, except that it requires the “processing items” to be dis-

played in response to “a predetermined selection operation” instead of “*only a single* predetermined selection operation.” *Id.* at 4:37–61 (emphasis added).

We turn first to Apple’s JMOL motion of invalidity. Although the district court granted Apple’s motion in part, finding that no reasonable jury could conclude that claim 24 of the ’068 patent was not invalid as anticipated by U.S. Patent No. 5,754,636 (Bayless), the district court denied Apple’s motion as to claim 23, rejecting Apple’s argument that claim 23 is anticipated by or rendered obvious over the same reference. *MobileMedia JMOL*, 966 F. Supp. 2d at 461–65. Apple contends that the district court erred as to claim 23.

Bayless discloses a telecommunications system that allows users to make and receive phone calls from a computer. Bayless, 1:58–62. Bayless’ system has a graphical user interface that can display call handling options available to the user in a “Make & Answer Calls” window. *Id.* at Fig. 41. The user prompts the Bayless system to display this call handling options window by activating what Bayless describes as a “Hotkey.” *Id.* at Fig. 42. Figure 42 provides one exemplary configuration for this “Hotkey,” showing that the Bayless “Make & Answer Calls” window is displayed when a user presses the keyboard’s “Ctrl” and “0” keys. *Id.*

The district court determined that because Bayless’ call handling options window is displayed only after a user presses two keys in a serial sequence, the jury could reasonably find that Bayless’ “Hotkey” constituted “multiple ‘predetermined selection operations’ [] rather than one [such operation].” *MobileMedia JMOL*, 966 F. Supp. 2d at 463–64. Thus, because claim 23 requires call handling options to be displayed in response to “*only a single* predetermined selection operation”—unlike claim 24, which allowed these options to be displayed after any number of “predetermined selection operation[s]”—the

district court denied Apple's motion for JMOL as to claim 23, while granting it as to claim 24. *Id.*; *compare* '068 patent (reexamination certificate), 4:31–34 (emphasis added), *with id.* at 4:51–54.

Apple contends that the unrebutted testimony at trial demonstrated that using one key instead of two keys to activate a window was well within the common knowledge of those with skill in the art. *See* J.A. 20044–45. For example, Apple's expert explained that in the industry, an "operation" would have been understood to include "one or more physical keys that result in a single action," such as to bring up and display Bayless' "Make & Answer Calls" window. J.A. 20026, 20043. Apple's expert further explained that a skilled artisan "would know that [the "Hotkey" operation of Bayless] does not have to be two keys," and that the "Hotkey" could easily be programmed as a single key. J.A. 20022–23, 20045. In addition, Apple's expert testified that the inclusion of "pull-down" selection boxes on the "Hotkey" menu would have explicitly signaled to one of skill in the art that the "Ctrl" and "O" key sequence could be changed to a different key sequence, such as to the single "F1" function key. J.A. 20044. Apple's expert concluded that it would have been obvious to one of skill in the art to implement the Bayless "Hotkey" operation with a single key. J.A. 20045. MobileMedia's expert did not rebut this testimony, offering only the conclusory statement that "I don't see evidence for that." J.A. 20506. Conclusory statements by an expert, however, are insufficient to sustain a jury's verdict. *See Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1268–69 (Fed. Cir. 2012).

While Apple's expert provided specific reasons why a skilled artisan would have found claim 23 to be obvious in view of Bayless and common knowledge possessed by those of skill in the art, MobileMedia's expert provided only testimony unrelated to the actual limitations of claim 23. For example, MobileMedia's expert asserted that it

would not have been obvious to a skilled artisan to use a single key as Bayless' "Hotkey" because the designer of the Bayless user interface for a computer faced different challenges than the designer of the mobile phone interface of the '068 patent. J.A. 20491–92. MobileMedia's expert sought to justify his assertion by explaining that Bayless "is talking about keyboards and PCs, whereas [claim 23 of the '068 patent] has a different set of engineering tradeoffs," relating to "cellphones" and "ease of use." *Id.* In a similar vein, MobileMedia's expert also testified that the 16 months between Bayless' and the '068 patent's filing date suggests that claim 23 was inventive because Apple "could not point to [] a single person that ever did use a single button on a *cellphone*" during this timeframe. J.A. 20653 (emphasis added). Claim 23, however, recites only a "communicating method for controlling a connecting state of a call," and includes no limitation that confines the claimed method to a cell phone or computer. '068 patent (reexamination certificate), 4:17–37. And during cross-examination, MobileMedia's expert conceded that "the fact that Bayless was implemented on a PC instead of on a cellphone [wa]sn't relevant" to the "communicating method" recited in the preamble of the claim. J.A. 20494.

In short, there is no substantial evidence to support a conclusion that a skilled artisan would not have found it obvious to take the straightforward and commonsensical step to configure the Bayless "Hotkey" to display the "Make & Answer Calls" window after the press of one key instead of two keys. No reasonable jury could conclude that claim 23 of the '068 patent would not have been obvious in view of Bayless and the common knowledge of a person with ordinary skill in the art. Thus, the district court erred by denying Apple's motion for JMOL of invalidity and we therefore reverse the district court's judgment that claim 23 of the '068 patent is not invalid. We need not reach Apple's argument that its accused iPhones

do not infringe the “listing said processing items” limitation of claim 23.

IV. MOBILEMEDIA’S CROSS-APPEAL

A. The ’075 patent (call rejection)

The ’075 patent describes a method for allowing a user to reject an incoming call when the user is already active on another call. In particular, the ’075 patent describes a cell phone that allows a user, by pressing a key, to reject the incoming call. ’075 patent, 3:24–47. According to the ’075 patent, pressing this key sends a “rejection message” to the applicable cell tower, indicating that the mobile telecommunications network should immediately release (i.e., drop) the second incoming call because the receiving phone is “unavailab[le].” *Id.* at 3:63–4:21.

MobileMedia asserts that Apple’s accused iPhones infringe apparatus claim 10, as well as method claims 5 and 6. For the purposes of this appeal, claim 10 of the ’075 patent is representative:

10. In a mobile communications device, apparatus in communication with a first calling station for selectably rejecting an incoming call, said apparatus comprising:

a transceiver operable to send and receive transmissions to and from a remote transceiver in a wireless system on a communications channel, said transceiver for receiving a transmission signifying that an incoming call is being attempted; and

a control processor coupled to said transceiver, said control processor for determining if said incoming call is to be rejected, and, in response to a positive determination, said control processor for

outputting a rejection message to said transceiver for transmission to said remote transceiver,

wherein said rejection message comprises at least one information element indicating to the wireless system that *the wireless system is to immediately release the incoming call* on the communication channel between the mobile communications device and remote transceiver.

'075 patent (reexamination certificate), 1:26–45 (emphasis added). The parties agree that the asserted claims require a mobile phone, which is already active on a call (“in communication with a first calling station”), to receive an incoming second call, and send a “rejection message” to a cell tower (“remote transceiver”) in the mobile network. The “rejection message” notifies the wireless system to immediately release the incoming call. *Id.* at 1:40–42. The district court construed the term “immediately release” to require that “the wireless system must, without requiring any additional action by or communication from the mobile phone, ‘release the incoming call on the communication channel between the mobile phone and remote transceiver.’” *MobileMedia SJ*, 907 F. Supp. 2d at 591. Thus, the district court determined that the term “immediately” did not refer to a time period, but to an action, and specifically, to the *absence* of an action. Neither party disputes the district court’s construction on appeal.

Both parties agree that Apple’s accused iPhones allow users to reject an incoming call while active on a first call by tapping an “ignore” icon on the iPhone’s screen, or alternatively, by pressing the power key twice. *Id.* at 592. The parties focused their arguments for infringement and invalidity on the contents of a comprehensive set of inter-related technical protocols developed by the European Telecommunications Standards Institute that together implement the Global System for Mobile communications

(GSM) standard for cellular networks. *See, e.g.*, J.A. 57185. Apple’s accused iPhones, which operate on GSM networks, were designed to comply with this GSM standard. Appellant’s Reply Br. 41. Relevant here, GSM 24.008 provides “core network protocols” that describe how mobile phones communicate with cell towers in a GSM network in order to make and receive calls and send and receive data. *See generally* J.A. 56260–56785. GSM 24.083 provides more specific protocols for implementing call waiting and call holding functions. *See* J.A. 56242–59. These two protocols of the GSM standard supply the technical information necessary to implement the particular call waiting function at issue in MobileMedia’s cross-appeal.

Before the district court, Apple filed a motion for summary judgment of noninfringement on the ground that its accused iPhones do not practice the “rejection message” limitation of the asserted claims. In its motion, Apple did not contest that its accused iPhones implemented the relevant sections of the GSM 24.083 and GSM 24.008 protocols, but argued that these sections were outside the scope of the asserted claims of the ’075 patent. In particular, Apple argued that a user’s rejection of an incoming call did not “immediately release” the call because additional action by and communication from the accused iPhone was required in order to actually terminate and release the call. *Id.* Apple explained that according to the GSM 24.083 and GSM 24.008 protocols, when a user elects to “ignore” an incoming call, the mobile phone transmits a “DISCONNECT” message to the mobile network. J.A. 56250 (GSM 24.083, § 1.3.1). After receipt of this “DISCONNECT” message, the mobile network enters into a “release request” state for the call, and waits for further response from the mobile phone. J.A. 56455 (GSM 24.008, § 5.4.3.2); J.A. 56429 (GSM 24.008 § 5.1.2.2.13). The mobile phone then responds with a “RELEASE COMPLETE” message, and it is only

after the mobile network receives this message that it releases the incoming call. J.A. 56455 (GSM 24.008 §§ 5.4.3.3, 5.4.3.4).

MobileMedia responded that the entire exchange of messages should be considered to be “rejection messages.” *MobileMedia SJ*, 907 F. Supp. 2d at 592. MobileMedia also pointed to an “abnormal case” in the GSM 24.008 protocol, in which the “ignored” call is released after receipt of the “DISCONNECT” message without the usual exchange of further messages between the mobile phone and mobile network described above. *Id.* at 592. MobileMedia contended that in this “abnormal case,” the mobile network can release the call if no further communication from the mobile phone is received for the duration of two successive timer periods. *Id.*; *see also* J.A. 56455–56 (GSM 24.008, § 5.4.3.5).

The district court granted Apple’s motion for summary judgment of noninfringement in part. *MobileMedia SJ*, 907 F. Supp. 2d at 593. It found that in the normal case, there was no genuine dispute that Apple’s iPhones did not meet the “immediately release” limitation of the asserted claims. *Id.* The district court determined, however, that there was still a question of fact as to whether the accused iPhones infringed under the GSM 24.008 protocol’s “abnormal case.” *Id.*

Apple also filed a motion for summary judgment of invalidity based on obviousness, relying on disclosures in two different sections of *prior* versions of the same protocols in the GSM standard that MobileMedia relied on for evidence of infringement. *Id.* Specifically, GSM 04.08 and GSM 04.83—earlier versions of GSM 24.008 and GSM 24.083, respectively—were published more than three years before the earliest priority date of the ’075

patent. *Id.*⁵ Further, MobileMedia agreed, and does not dispute here, that the prior art GSM 04.83 and GSM 04.08 protocols are identical in all relevant aspects to their later-version counterparts (GSM 24.083 and GSM 24.008). *Id.* at 594.

Whereas MobileMedia relied on Apple’s alleged implementation of GSM 24.008, § 5.4 (entitled “Call clearing”) for its infringement theory, Apple based its invalidity challenge on GSM 04.08, § 5.2.2 (entitled “Mobile terminating call establishment”). *Id.* Apple asserted that this section discloses a “RELEASE COMPLETE” message transmitted from a mobile phone to the mobile network that, unlike the “DISCONNECT” message relied on by MobileMedia to allege infringement, can release an incoming call without any further communication between the mobile phone and the network. *Id.* Apple contended that this message, in combination with GSM 04.83, §§ 1.1 and 1.3.1, which provide instructions for implementing call waiting functionality—including the treatment of incoming calls when a user is already active on a call, J.A. 57583—discloses every limitation of the ’075 patent’s asserted claims. *MobileMedia SJ*, 907 F. Supp. 2d at 595.

The district court agreed that MobileMedia had not raised any genuine dispute that GSM 04.83 and GSM 04.08 disclose all limitations of the ’075 patent’s asserted

⁵ Before the district court (and here on appeal), Apple also contended that (i) the GSM 04.08 and GSM 04.83 standards should be treated as a single document, and thus anticipate the asserted claims, and (ii) the asserted claims of the ’075 patent were rendered obvious by the GSM 04.08 and GSM 04.83 standards in combination with the ’068 patent. *MobileMedia SJ*, 907 F. Supp. 2d at 595; Cross-Appellee’s Br. 67–69. We need not reach either of these issues to resolve this appeal.

claims. *Id.* at 594. The district court, however, denied Apple’s summary judgment motion of invalidity because it found that a genuine dispute of material fact existed as to whether a person having ordinary skill in the art would have been motivated to combine the two protocols in the GSM standard to arrive at the asserted claims. *Id.* at 595–96. At trial, the jury found that Apple’s accused iPhones infringed the asserted claims of the ’075 patent under the “abnormal” case described in GSM 24.008, § 5.4.3.5. *MobileMedia JMOL*, 966 F. Supp. 2d at 457. The jury also found that the asserted claims of the ’075 patent were not invalid. *Id.* at 455. The district court, however, granted Apple’s renewed motion for JMOL as to noninfringement and invalidity for obviousness. *Id.* at 457, 459. In its cross-appeal, MobileMedia contends that the district court erred in granting Apple’s JMOL motions because substantial evidence supports the jury’s verdict of both infringement and nonobviousness.

We turn first to the district court’s grant of Apple’s JMOL motion of invalidity, which we review *de novo*. *Bos. Scientific*, 554 F.3d at 990. In evaluating that JMOL motion, the district court first noted that MobileMedia did not dispute that the GSM 04.08 and GSM 04.83 protocols disclose every limitation of the asserted claims. *MobileMedia JMOL*, 966 F. Supp. 2d at 454. Nor did MobileMedia offer any evidence of objective indicia of nonobviousness. *Id.* Thus, as on summary judgment, the parties’ dispute centered on whether one with ordinary skill in the art would have been motivated to combine the two GSM standards at the time of the alleged invention.

The district court found that Apple’s expert provided several reasons that a skilled artisan would have combined the two relevant protocols of the GSM standard. *Id.* at 453. Apple’s expert explained that the GSM 04.08 (fundamental interactions between mobile phones and the mobile network) and 04.83 (specific call waiting and call holding functions) protocols were both part of the same

comprehensive GSM standard published by the European Telecommunications Standards Institute in 1995. *Id.* An Apple engineer testified that engineers routinely reference different “portions of the GSM standard[]” and that if an engineer needed to implement a particular mobile phone function according to the GSM standard, it was “trivial” to find the relevant sections in the GSM protocols because each protocol includes a detailed table of contents and index. *Id.*; J.A. 19941. Apple’s expert also explained that GSM 04.83 expressly references GSM 04.08 in numerous places, instructing that mobile phones “shall act in accordance with GSM 04.08” to implement the specific call waiting and call clearing functions relevant here, and that the referenced sections of the GSM 04.08 and GSM 04.83 protocols are labeled in a “similar” manner. *MobileMedia JMOL*, 966 F. Supp. 2d at 453; J.A. 20185–86. Specifically, GSM 04.83, § 1.1 is titled “Waiting call indication and confirmation” in the index, and the companion sections in GSM 04.08 are titled “Call indication” (§ 5.2.2.1) and “Call confirmation” (§ 5.2.2.3). *Compare* J.A. 57577 (table of contents for GSM 04.83), *with* J.A. 57175 (same for GSM 04.08).

In contrast, MobileMedia’s expert testified that a person having ordinary skill in the art would have been discouraged from using GSM 04.08 to implement the rejection of an incoming call in a call waiting context because GSM 04.08 only describes how to handle a single call, not multiple calls. *MobileMedia JMOL*, 966 F. Supp. 2d at 454; J.A. 20482. The district court found, however, that this testimony could only support a jury verdict that the GSM 04.08 protocol in *isolation* did not render the asserted claims anticipated or obvious. *MobileMedia JMOL*, 966 F. Supp. 2d at 455. As to whether a skilled artisan, in view of *both* the GSM 04.08 and GSM 04.83 protocols in the GSM standard, would have been motivated to combine them, the district court noted that MobileMedia’s expert offered only conclusory testimony that

“[GSM 04.83] is small, [GSM 04.08] is big.” *Id.*; J.A. 20482. But as the district court found, the fact that one protocol is “big” and one protocol is “small” in terms of its number of pages provides no counter to the testimony of Apple’s expert that it would have been obvious to a person of ordinary skill in the art to consult both GSM protocols to implement the claimed call waiting functionality by following the express references to GSM 04.08 within GSM 04.83 and using the detailed table of contents in GSM 04.08 to locate the relevant “Call indication” and “Call confirmation” sections within that document. *MobileMedia JMOL*, 966 F. Supp. 2d at 455.

MobileMedia also argues that the rejection message disclosed in the GSM 04.08 protocol—which includes several fields providing information about the mobile phone sending the message to the mobile network—has one informational field suggesting that the mobile phone is *not* busy, and thus the skilled artisan would have been discouraged from combining GSM 04.08 with GSM 04.83, which addresses scenarios where the mobile phone *is* busy. Specifically, MobileMedia points to where GSM 04.08 indicates that the RELEASE COMPLETE message includes an informational field stating “cause #21 ‘call rejected.’” J.A. 57262 (GSM 04.08, § 5.2.2.3.1). MobileMedia’s expert testified that one of skill in the art, to understand the meaning of that text field, would have used the table of contents to locate the “Annex H” section of GSM 04.08 (which includes “GSM specific cause values for call control”), and find that “cause #21” indicates that “the equipment sending this cause does not wish to accept this call although it could have accepted the call because *the equipment sending the cause is neither busy nor incompatible.*” J.A. 20474–76; J.A. 57559–60 (GSM 04.08,

Annex H and Annex H.1.9) (emphasis added).⁶ MobileMedia’s expert testified that “this message means I’m [not] busy” and that “to a person of ordinary skill, this message is sent only if [the mobile phone] is not busy.” J.A. 20476–77.

The district court, however, correctly found that this testimony again failed to consider that the skilled artisan would be aware of both the GSM 04.08 and GSM 04.83 protocols. *MobileMedia JMOL*, 966 F. Supp. 2d at 456. The trial record shows that MobileMedia sought testimony from its expert only on “the ability of [GSM] 04.08 to be used to reject [a] second call.” J.A. 20474 (emphasis added). Thus, MobileMedia’s expert testified merely that a skilled artisan looking at this “cause value” would have “been discouraged from using *this document* [GSM 04.08]” and would have been “discouraged [after] looking at *the document* [GSM 04.08] and finding no help” for implementing the claimed invention. *Id* (emphases added). As the district court found, “MobileMedia’s validity theories did not address the fact that one of ordinary skill *also knew* the contents of GSM 04.83 and could start there.” *MobileMedia JMOL*, 966 F. Supp. 2d at 456 (emphasis added).

And Apple demonstrated that after starting with GSM 04.83, a skilled artisan would have been led to GSM 04.08. In particular, GSM 04.83, § 1.1 (entitled “Waiting call indication and confirmation”) expressly instructs that a mobile phone and the mobile network should interact in

⁶ MobileMedia’s expert did not explain why one of skill in the art would allegedly rely on the indices provided in GSM 04.08 to locate more detailed definitions of certain terms, while at the same time ignoring the indices for the purpose of locating the similarly-titled call waiting protocol sections in GSM 04.08 expressly referenced by GSM 04.83.

accordance with GSM 04.08 if a user receives an incoming call when the user is already active on a call. J.A. 57583. To release the incoming call, the mobile phone, *inter alia*, sends a “[call] clearing message” to the mobile network indicating that the user is busy. J.A. 57585 (GSM 04.83, § 1.3.1). GSM 04.08 discloses several types of “call clearing” messages and procedures for handling those messages. See J.A. 57174–75. One type of “call clearing” message is the “DISCONNECT” message that MobileMedia relied on as evidence of infringement, which is described in §§ 5.4.2, 5.4.3.1, and 5.4.3.2, among others. Section 5.2.2.3.1 describes another type of “call clearing” message—a “RELEASE COMPLETE” message—that in some circumstances can be sent by the mobile phone instead of the “DISCONNECT” message, and is “processed” by the mobile network “in accordance with section 5.4.” J.A. 57262.⁷ Relevant here, upon receipt of a “RELEASE COMPLETE” message, the mobile network releases the incoming call without waiting for additional communication from the mobile phone. J.A. 57273 (GSM 04.08, § 5.4.3.4). Thus, as Apple notes, it is the *message* (i.e., RELEASE COMPLETE), and not the text field within that message (e.g., “cause #21”), that prompts the mobile network to release the call. Indeed, the GSM standard requires that the mobile network “shall accept an incoming RELEASE COMPLETE message used to initiate the [call] clearing *even though the cause information is not included.*” J.A. 57272 (GSM 04.08, § 5.4.2) (emphasis added).

On the basis of these findings, the district court concluded that even when resolving all disputed facts in MobileMedia’s favor, no reasonable jury could conclude that the asserted claims of the ’075 patent are not invalid

⁷ According to Apple, its accused iPhones do not implement this particular GSM protocol. J.A. 20185.

as obvious over the GSM 04.08 and GSM 04.83 protocols in the GSM standard. *MobileMedia JMOL*, 966 F. Supp. 2d at 457. After careful examination of the record, we agree with the district court's finding that no substantial evidence supports a determination that one of ordinary skill in the art would not have been motivated to combine §§ 1.1 and 1.3 of GSM 04.83 and § 5.2.2 of GSM 04.08. Similarly, we find no error in the district court's ultimate conclusion that no reasonable jury could conclude that claims 5, 6, and 10 of the '075 patent are not invalid as obvious in view of those two protocols in the GSM standard.

We therefore affirm the district court's grant of Apple's motion for JMOL of invalidity of the asserted claims of the '075 patent. We need not reach MobileMedia's appeal from the district court's grant of Apple's motion for JMOL of noninfringement of those same claims.

B. The '231 patent (call alerts)

The '231 patent discloses a communication device, such as a mobile phone, that permits a user to stop a ringtone alert for an incoming call without notifying the caller. '231 patent, Abstract. According to the '231 patent, when a user received an unwanted call, the prior art provided several options for silencing the ringtone triggered by receipt of that call: (i) answering but then quickly "hang[ing] up," thus "forcibly disconnecting" the call, or (ii) turning off the phone. *Id.* at 1:17–25. Forcibly disconnecting the call, however, left the caller with "an unpleasant feeling" because the caller "c[ould] notice that the circuit was broken off intentionally." *Id.* at 1:26–29. Turning off the phone was not preferable because the user could forget to turn the phone on again, "possib[ly] missing the next incoming call." *Id.* at 1:37–42. The '231 patent provides several alternatives to silence a ringtone without these drawbacks. *Id.* at 4:66–5:17.

In one embodiment, a user can press the phone's power key for some amount of time in order to stop the ringtone sound without ending the call. *Id.* at 2:57–3:6; *see also id.* at Fig. 3 (“stop alert sound”). In another embodiment, pressing the phone's power key reduces the volume of the ringtone sound. *Id.* at 4:40–47; *see also id.* at Fig. 4 (“reduce volume of alert sound”). Asserted claim 12 is excerpted below:

12. A communication terminal for informing a user of a received call from a remote caller by an alert sound, comprising:

an alert sound generator for generating the alert sound when the call is received from the remote caller;

control means for controlling said alert sound generator;

. . . ;

wherein said alert sound generator is generating the alert sound and . . . , said control means controls said alert sound generator *to change a volume of the generated alert sound* only for the received call, without affecting the volume of the alert sound for future received calls, while leaving a call ringing state, as perceived by the remote caller, of the call to the terminal from the remote caller unchanged

'231 patent (reexamination certificate), 2:11–39 (emphasis added). Asserted claim 2, which depends from claim 12, recites:

2. The communication terminal according to claim 12, wherein said control means controls the state of said alert sound generator *to stop the sound*.

Id. at 1:31–34 (emphasis added). Asserted claim 3, which also depends from claim 12, recites:

3. The communication terminal according to claim 12, wherein said control means controls the state of said alert sound generator to *reduce the volume of the sound*.

Id. at 1:35–39 (emphasis added).

Relevant to MobileMedia’s cross-appeal, the district court construed the term “to change a volume of the generated alert sound” in claim 12 as “to alter the degree of loudness of the alert sound that is being generated without cutting off the telephone circuit.” *MobileMedia SJ*, 907 F. Supp. 2d at 598. Further, the district court interpreted the “stop[ping] the sound” limitation in dependent claim 2 as not encompassed by the “chang[ing] a volume” limitation in independent claim 12. *Id.* Thus, rather than narrowing the scope of claim 12’s “change a volume” limitation, the district court appears to have interpreted dependent claim 2’s “stop the sound” limitation as providing an additional, separate function to the claimed communication terminal recited in independent claim 12. In support of its construction, the district court reasoned that “chang[ing] a volume” and “stop[ping] the sound” were described in the specification as “alternatives, not interchangeable terms.” *Id.*

Under this construction, the district court determined Apple did not infringe any asserted claim of the ’231 patent. *Id.* at 599. In particular, while Apple’s accused iPhones include a control means that can stop the sound of a ringtone, the district court found that Apple’s iPhones do not “reduce, increase, mute, or otherwise change the volume of the audio [alert sound] playback [as required by claim 12].” *Id.* at 598. MobileMedia contends that the district court erred by construing this limitation of the independent claim to exclude both the narrower “stop the sound” and “reduce the volume of the sound” embodiments disclosed in the ’231 patent’s specification and recited in asserted dependent claims 2 and 3, respectively.

Because the district court's construction relies only on intrinsic evidence, we review its construction *de novo*. *Teva*, 135 S. Ct. at 841. Neither party disputes that the “control means” invokes 35 U.S.C. § 112 ¶ 6. Thus, this means-plus-function limitation covers the corresponding structure described in the specification for performing the claimed function, and equivalents thereof. *Saffran v. Johnson & Johnson*, 712 F.3d 549, 561 (Fed. Cir. 2013). The language of the claims indicates that the function performed by the “control means” is “controlling the alert sound generator to change a volume of the generated alert sound.” See '231 patent (reexamination certificate), 2:26–27. The only structure disclosed in the specification for performing this claimed function is the phone's CPU and alert sound generator on/off controller. *Id.* at 2:49–52. In response to depression of the phone's power key, the specification indicates that the CPU and on/off controller can “stop the generation of the alert sound.” *Id.* at 3:3–6; *see also id.* at 2:53–55. As an alternative, the specification indicates that depression of the power key can instead result in the “volume of an alert sound [being] reduced.” *Id.* at 4:37–43, 5:7–11. *Compare id.* at Fig. 3 (stopping a sound), *with id.* at Fig. 4 (reducing a volume).

In short, the specification indicates that the “control means” controls the alert sound generator to change a volume of the generated alert sound by either stopping the alert sound or reducing a volume of the alert sound. In the context of the specification, “chang[ing] a volume” encompasses both “stop[ping] the sound” and “reduc[ing] the volume of the sound.” *See id.* Further, neither party has identified anything in the prosecution history or extrinsic evidence that would suggest otherwise.

Apple contends that dependent claim 2 does not explicitly tie the “stop the sound” limitation to the “change a volume” limitation in claim 12. In essence, Apple defends the district court's construction on the ground that it is possible to construe claim 12 and claim 2 in a manner

such that “stop[ping] the sound” and “chang[ing] a volume” are mutually exclusive. Apple speculates that a device could practice both by “dialing down the audio level to alter the degree of loudness . . . and then stopping the generation of the sound.” Cross-Appellee’s Br. 75. Apple, however, provides no support in the specification or prosecution history for its example. Regardless, Apple’s construction ignores that claim 2 ties “stop[ping] the sound” to the *control means*—the CPU and alert sound on/off controller. And as discussed *supra*, the specification describes this control means structure as stopping or reducing the volume of the alert sound.

Finally, Apple contends that MobileMedia seeks to improperly use the doctrine of claim differentiation in order to broaden the scope of independent claim 12 beyond what is supported by the specification. While we agree with Apple that “[t]he dependent claim tail cannot wag the independent claim dog,” *N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed. Cir. 1993), no such concern is present here. Rather, it is Apple that urges us to affirm a claim construction that would exclude a preferred embodiment of the invention disclosed in the specification. Such a construction is rarely correct without any persuasive evidentiary support. *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) (citing *Vitronics Corp. v. Conceptor, Inc.*, 90 F.3d 1576, 1583–84 (Fed. Cir. 1996)).

Consistent with the specification, “controlling the alert sound generator to change a volume of the generated alert sound” by the “control means” encompasses both stopping and reducing the volume of the alert sound as recited in dependent claims 2 and 3, respectively. Because the district court’s grant of Apple’s motion for summary judgment of noninfringement of claims 2–4 and 12 of the ’231 patent was based on an erroneous construction, we vacate the district court’s grant of this motion and remand to the district court for further proceedings.

* * *

We have considered the parties' remaining arguments and find them unpersuasive.

V. CONCLUSION

For the foregoing reasons, we conclude that (i) substantial evidence supports the jury's determination that claim 73 of the '078 patent is not invalid, (ii) no reasonable jury could find that claim 73 of the '078 patent is infringed by Apple's accused iPhones, (iii) no reasonable jury could conclude that claim 23 of the '068 patent is not invalid as obvious under 35 U.S.C. § 103, (iv) no reasonable jury could conclude that claims 5, 6, and 10 of the '075 patent are not invalid as obvious in view of the GSM 04.08 and GSM 04.83 protocols, and (v) that the district court's claim construction of "to change a volume of the generate alert sound" was erroneous. Therefore, we (i) affirm the district court's denial of Apple's motion for JMOL of invalidity of claim 73 of the '078 patent, (ii) reverse the district court's denial of Apple's motion for JMOL of noninfringement of claim 73 of the '078 patent, (iii) reverse the district court's denial of Apple's motion for JMOL of invalidity of claim 23 of the '068 patent, (iv) affirm the district court's grant of Apple's motion for JMOL of invalidity of claims 5, 6, and 10 of the '075 patent, (v) vacate the district court's grant of summary judgment of noninfringement of claims 2–4 and 12 of the '231 patent, and (vi) remand for further proceedings. In view of these holdings, we need not resolve any of the parties' remaining appeals or cross-appeals.

**AFFIRMED IN PART, REVERSED IN PART,
VACATED, AND REMANDED**

COSTS

No costs.