

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,

Petitioner

v.

TELEFONAKTIEBOLAGET L M ERICSSON (publ),

Patent Owner.

Case No. IPR2024-00728

Patent No. 7,151,430 B2

Before Daveina B. Williams, *Trial Paralegal*

**PATENT OWNER'S SUR-REPLY
TO PRELIMINARY RESPONSE**

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EXHIBIT LIST

Petitioner Exhibits

Ex. No.	Description
1001	US 7,151,430 Mattsson
1002	File History of US 7,151,430
1003	Declaration of Tentzeris
1005	US PUB 20030063034 A1 Taniguchi
1006	US 6,373,447 Rostoker
1007	PCT WO 9805048 Midya
1008	US PUB 20050077992 A1 Raghavan
1009	US PUB 2001/0030591 Gardner
1010	“Signal Integrity Issues and Printed Circuit Board Design” to Brooks
1017	WO 2004/0122213 Enzinger
1023	US 6,137,447 to Saitoh
1042	“Class Definition for Class 343 Communications: Radio Wave Antennas,” U.S. Patent & Trademark Office (2001), https://web.archive.org/web/20011123183942/http://www.uspto.gov/web/patents/classification/uspc343/defs343.htm

Patent Owner Exhibits

Ex. No.	Description
2001	Statutory Disclaimer of claims 20 & 21 of U.S. Patent 7,151,430
2002	Declaration of Dr. Paul Prucnal In Support of Patent Owner Preliminary Response
2003	US 6,512,422 Dufour
2004	US 6,664,606 Estes
2005	US 6,891,444 Jacobson
2006	US 6,894,598 Heima
2007	WO 2003/084295 Bhailis
2008	US 6,194,987 Zhou

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<i>Airbus S.A.S. v. Firepass Corp.</i> , 941 F.3d 1374 (Fed. Cir. 2019)	6
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<i>Netflix, Inc. v. DivX, LLC</i> , 80 F.4th 1352 (Fed. Cir. 2023)	2
<i>Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.</i> , 66 F.4th 1373 (Fed. Cir. 2023)	1
<i>Unwired Planet, LLC v. Google Inc.</i> , 841 F.3d 995 (Fed. Cir. 2016)	1

I. TANIGUCHI AND ROSTOKER ARE NOT ANALOGOUS TO THE ‘430 PATENT

A. Legal Standards

Prior art references “qualify as prior art for an obviousness determination only when analogous to the claimed invention.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). “Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *Id.* To determine if art is analogous, courts look to “the purposes of both the invention and the prior art.” *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016). Intel bears the burden of proving prior art is analogous to the challenged patent. *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023).

B. Taniguchi and Rostoker are not from the same field of endeavor as the ‘430 Patent.

The first test for analogous art requires Intel to prove that Taniguchi and Rostoker are in the same field of endeavor as the ‘430 Patent, where the appropriate field of endeavor is determined “by reference to explanations of the

invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.” *In re Bigio*, 381 F.3d at 1325. *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352 (Fed. Cir. 2023) recognizes the analogous art test “gauges whether prior art is ‘too remote’ to be treated as analogous art.” *Id.* at 1359. (internal citation omitted). The scope of the field of endeavor will vary with the factual description of each invention. *Id.* Intel has not only failed to identify the proper field of endeavor, but it has also failed to show that the prior art references fall within either its alleged field or the appropriate field of endeavor.

First, Intel improperly expands the field of endeavor beyond the ‘430 Patent’s explanations of the invention’s subject matter. Intel broadly alleges that the ‘430 Patent’s field of endeavor is “inductor design.” PAPER 8, p. 1. The ‘430 Patent, however, describes the invention as “[a]n inductor design ***for reducing mutual EM coupling between VCO (voltage-controlled oscillator) resonators and a method of implementing the same on a single semiconductor chip.***” EX1001, 1:59-61 (emphasis added). Moreover, the claims at issue cover inductor layouts in which the inductors have first and second loops (EX1001, cl. 1-10) or methods for reducing mutual electromagnetic coupling between first and second inductors on a semiconductor die (EX1001, cl. 11-19). The ‘430 Patent’s field of endeavor is not as broad as generic inductor design.

Second, even under Intel’s impermissibly broad definition, neither Taniguchi nor Rostoker falls within the same field of endeavor as the ‘430 Patent. A POSITA would consider the structure and function of Taniguchi and Rostoker to be far different from the structure and function of the ‘430 Patent. The references teach optimizing antennas to create uniform electromagnetic fields for sensing. Conversely, the ‘430 Patent solved the problem of inductor coupling.

Taniguchi is directed to a radio antenna system, not to inductor design or inductor layouts having first and second loops on semiconductor dies. EX1005, [0001, 00085]. Taniguchi discloses a radio guidance antenna that includes antenna 1 and antenna 2. EX1005, FIGS. 6A-6E & 13A-13B, & [0081]. Taniguchi’s radio guidance antennas face each other as “gates” that detect the passing of a device that has an RFID tag. EX1005, FIGS. 13A-B & 15A-E, [0081, 0084]. Taniguchi’s radio guidance antenna system was intended to generate a strong enough electromagnetic field from the antennas to detect tags at a distance from the antennas. EX1005, [0092], EX2002, ¶ 47. Taniguchi does not relate to inductor design, an inductor layout having first and second inductors on a semiconductor die, or to methods for reducing mutual electromagnetic coupling between first and second inductors on a semiconductor die. EX2002, ¶¶ 26-28 & 46.

Rostoker is directed to an improved technique for integrating an antenna on an integrated circuit chip, not to inductor design or inductor layouts having first and second loops on semiconductor dies. EX1006, 3:52-65. Rostoker recognizes inductors may be integrated on the chips in addition to the antennas. *Id.*, 4:21-23; 14:1-3 and 28-30. But Rostoker only describes antennas in detail. EX2002, ¶ 77. Rostoker teaches nothing about inductors in the same field as the ‘430 Patent’s inductor layouts for semiconductors. EX1006, 4:21-22, 14:1-2, & 14:28-29. Rostoker’s antenna layouts would not function as inductors on a semiconductor die. *Id.* at ¶ 77. They are not in the same field of endeavor as the ‘430 Patent. *Id.*

Intel posits the USPTO’s classification system from 2001 shows the antenna class is narrower than and subsumed, for certain designs, in the inductor class. PAPER 8 at 2-3. Attorney argument and conclusory statements unsupported by factual evidence have little probative value. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) . EX1042 does not establish Taniguchi and Rostoker are in the same field of endeavor as the ‘430 Patent. Inductors are structures other than antennas which may be used in inductive type signaling systems. *Id.* at 13, note 23. Although ‘inductor devices . . . may be used in inductive type signaling systems,’ inductors are not classified as antennas in Class 343. Class 343 excludes systems such as “oscillation generator systems, modulator systems, amplifier systems,

which are used as component parts of radio wave energy transmission or reception systems but which are of more general utility.” *Id.* at 1 C(2). Class 343 also excludes “inductive coupling.” *Id.* at C(3). The ‘430 Patent’s inductors are for reducing inductive coupling between voltage-controlled oscillators (VCOs), which are oscillator generator systems. EX1001, 1:59 – 2:5. EX1042 recognizes that antennas like Taniguchi and Rostoker belong in Class 343, but the claims recite an inductor device with classification in Class 336. *Id.* 13, note 27. That is consistent with the classes identified in the ‘430 Patent (EX1001, class 336), Taniguchi (EX1005 Class 343) and Rostoker (EX1006, Class 343). Taniguchi and Rostoker fail the field of endeavor test.

C. Taniguchi and Rostoker are not reasonably pertinent to the particular problem involved in the ‘430 patent.

Because Taniguchi and Rostoker are not in the same field of endeavor as the ‘430 Patent, Intel must prove they are reasonably pertinent to the particular problem. “[W]hen addressing whether a reference is analogous art with respect to a claimed invention under a reasonable-pertinence theory, the problems to which both relate must be identified and compared.” *Donner Tech., LLC v. Pro Stage Gear, LLC.*, 979 F.3d 1353, 1359 (Fed. Cir. 2020). Intel misplaces reliance on *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374 (Fed. Cir. 2007). There, nothing about the patented mechanism required a particular focus on treadmills, therefore

analogous art could come from other areas describing hinges and the like. *Id.* at 1380. Here, the ‘430 Patent requires a particular focus on inductor layouts for semiconductors; therefore, analogous art cannot come from other areas like antennas. *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374 (Fed. Cir. 2019) likewise is factually distinguishable from this proceeding. The patent disclosed a fire prevention and suppression system. *Id.* at 1376. The prior art was an earlier patent with the same inventor for simulating low-oxygen conditions similar to those needed for fire suppression. *Id.*

Taniguchi and Rostoker are not reasonably pertinent to the particular problem the ‘430 Patent solved, *i.e.*, too much mutual EM coupling between VCO resonators on a semiconductor die due to the inductors. Intel again broadly mischaracterizes the particular problem as “efficient circuit design.” PAPER 8, p. 4. By relying on this vague goal, Intel fails to identify and compare any actual problems identified in Taniguchi or Rostoker to the ‘430 Patent. Taniguchi, for example, addresses the problem of too little mutual magnetic coupling between antennas in a retail setting but not the problem of too much mutual magnetic coupling between inductors on a semiconductor chip. EX2002, ¶ 28. Similarly, Rostoker addresses problems related to forming antennas on a circuit chip. Neither reference’s problem is reasonably pertinent to the problem of an inductor design

for reducing mutual EM coupling and a method of implementing the same on a single semiconductor chip.

Taniguchi and Rostoker teach antennas, not inductors, and their antennas perform a different function than the inductor layout of the '430 Patent. They both teach use of antennas to radiate an EM field for facilitating a more efficient antenna system, EX1005, [0062] & EX1006, 1:25-27, and describe coils that emit electromagnetic radiation in products such as RFID tags or other communication applications. EX1005, FIG. 21, [0084] & EX1006 at 4:29-36. Taniguchi and Rostoker have nothing to do with reducing coupling between a pair of inductors in a layout on a semiconductor die.

In view of the differing purpose, design, and applications for these antenna coils, a POSITA would not have found Taniguchi or Rostoker reasonably pertinent to the particular problem of the '430 Patent or been motivated to modify Taniguchi or Rostoker or combine them with different references to create an inductor layout with reduced coupling between a pair of inductors on a semiconductor die.

EX2002, ¶ 79. Because Intel has not proved the requisite correlation between the problems addressed in Taniguchi or Rostoker and the '430 Patent or that the references fall within the same field of endeavor as the '430 Patent, Taniguchi and Rostoker do not qualify as analogous art.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on August 26, 2024 a copy of the foregoing Patent Owner Sur-Reply was served via email on the following attorneys for the Petitioner:

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