

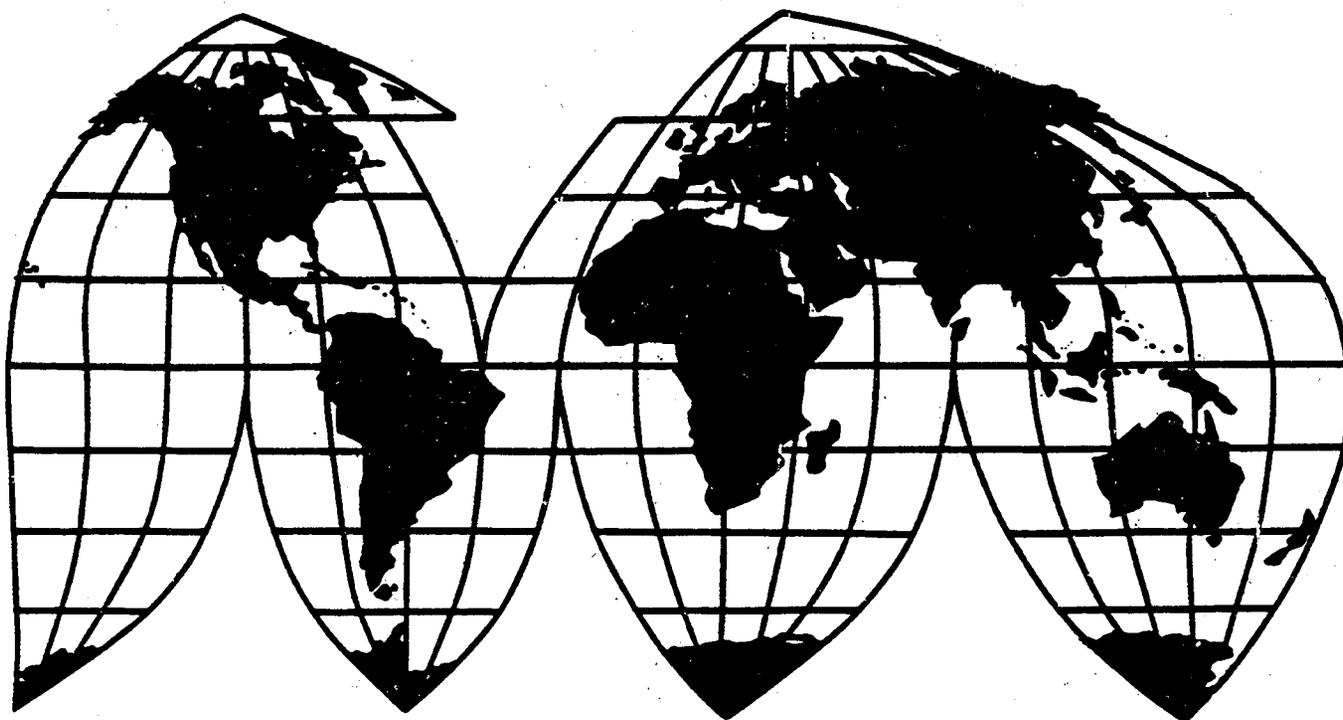
*In the Matter of*  
**Certain Memory Devices  
with Increased Capacitance and  
Products Containing Same**

Investigation No. 337-TA-371

Publication 2982

July 1996

**U.S. International Trade Commission**



Washington, DC 20436

# **U.S. International Trade Commission**

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United States International Trade Commission  
Washington, DC 20436**

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**Certain Memory Devices  
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UNITED STATES INTERNATIONAL TRADE COMMISSION

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In the Matter of	RECEIVED OFC OF THE SECRET U.S. INT'L TRADE COM	Investigation No. 337-TA-371
CERTAIN MEMORY DEVICES WITH INCREASED CAPACITANCE AND PRODUCTS CONTAINING SAME	APR 22 P 3:51	

**NOTICE OF COMMISSION DECISION NOT TO REVIEW AN INITIAL  
DETERMINATION TERMINATING THE INVESTIGATION ON THE BASIS OF A  
FINDING OF NO VIOLATION OF SECTION 337**

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Commission has determined not to review the initial determination (ID) issued by the presiding administrative law judge (ALJ) on March 21, 1996, terminating the above-captioned investigation on the basis of a finding of no violation of section 337 of the Tariff Act of 1930.

FOR FURTHER INFORMATION CONTACT: Mark D. Kelly, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3106.

SUPPLEMENTARY INFORMATION: On January 30, 1995, the Commission ordered that an investigation be instituted to determine whether there are violations of section 337 of the Tariff Act of 1930, as amended, in the importation, sale for importation, or sale within the United States after importation of certain memory devices with increased capacitance and products containing same by reason of infringement of certain claims of U.S. Letters Patent 5,166,904 (the '904 patent), owned by complainants Emanuel Hazani and Patent Enforcement Fund, Inc.,

and whether there exists an industry in the United States as required by subsection (a)(2) of section 337.

The Commission instituted an investigation of the complaint and published a notice of investigation in the Federal Register on February 6, 1995. 60 Fed. Reg. 7068. The following thirteen firms were named as respondents: Mitsubishi Electric Corporation, Tokyo, Japan; Mitsubishi Electronics America, Inc., Cypress, CA; NEC Corporation, Tokyo, Japan; NEC Electronics, Inc., Mountain View, CA; OKI Electronic Industry Co., Ltd., Tokyo, Japan; OKI America, Inc., Hackensack, NJ; Hitachi, Ltd., Tokyo, Japan; Hitachi America, Ltd., Tarrytown, NY; Samsung Electronics Co., Ltd., Seoul, Korea; Samsung Electronics America, Inc., Ridgefield Park, NJ; Samsung Semiconductors, Inc., San Jose, CA; Hyundai Electronics Industries Co., Ltd, Seoul, Korea; and Hyundai Electronics America, Inc., San Jose, CA. The complaint alleged that the respondents manufactured and imported 16- and 64-Mbit dynamic random-access memories (DRAMs) that infringe certain claims of the '904 patent.

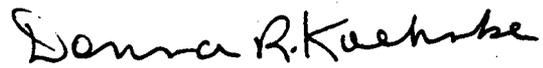
On October 13, 1995, the ALJ issued an ID (Order No. 63) granting a motion filed by the NEC respondents for summary determination of the invalidity of claims 1-2, 4-13, 15-17, 22 and 25 based on anticipation by U.S. Letters Patent 4,758,986 to Kuo (the "Kuo patent"). On October 20, 1995, the ALJ issued an ID (Order No. 64) granting a motion filed by the Samsung respondents for summary determination of the invalidity of claims 18-20 and 26-28 also based on anticipation by the Kuo patent and terminating the investigation as to claim 21. On October 30, 1995, the ALJ issued an ID (Order No. 65) granting a motion filed by the Mitsubishi respondents for summary determination of non-infringement as to claim 14.

On December 14, 1995, the Commission determined not to review Orders Nos. 63 and 65, but determined to review in part and remand the ID (Order No. 64) issued by the ALJ on October 20, 1995.

On March 21, 1996, after further briefing from the parties, the ALJ issued an ID (Order No. 71) granting a motion filed by the Samsung respondents for summary determination of invalidity of claims 18-20 and 26-28 based on anticipation by the Kuo patent. Complainants filed a petition for review of the ID on March 28, 1996. The Samsung respondents and the Commission investigative attorney filed oppositions to the petition for review on April 12, 1996.

This action is taken under the authority of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, and Commission rule 210.42, 19 C.F.R. § 210.42. Copies of the public versions of the ALJ's ID and all other public documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on the matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.

  
Donna R. Koehnke  
Secretary

Issued: **April 22, 1996**



**PUBLIC VERSION**

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

*K. L. B. J.*  
ID no. 3-21-96  
Conf. \_\_\_\_\_  
Public \_\_\_\_\_  
Issued (R) 3-22-96  
Decision due 4-3-96 + 3/4m  
Ret. to pat. due \_\_\_\_\_  
Gov't comments due \_\_\_\_\_  
Public comments due \_\_\_\_\_  
Comm. decision due 5-8-96

In the Matter of )  
)  
CERTAIN MEMORY DEVICES WITH )  
INCREASED CAPACITANCE AND )  
PRODUCTS CONTAINING SAME )  
)

Investigation No. 337-TA-371

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Order No. 71: Initial Determination Granting Motion for Summary Determination of Invalidity; Termination of Investigation

On February 7, 1996, respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Semiconductor, Inc. (collectively "Samsung"), filed a motion for summary determination that claims 18-20 and 26-28 of U.S. Patent No. 5,166,904 are invalid as obvious in view of the prior art. (Motion No. 371-143.) The motion is opposed by complainants Emanuel Hazani and the Patent Enforcement Fund (PEF). The Commission investigative staff supports the motion and also moved for summary determination on the ground that the '904 patent is anticipated. Complainants were given additional time to file their opposition to the staff's motion and argument. Samsung takes no position with respect to the Staff's anticipation motion.

Procedural Background. In Order No. 59, a summary determination of invalidity was granted with respect to the so-called "textured" claims of the Hazani '904 patent (i.e., claims 1, 2, 4-13, 15-17, and 22-25) because they are anticipated under 35 U.S.C. 102 by the Kuo '986 patent. In Order No. 63, reconsideration of Order No. 59 was denied and Orders 59 and 63 were certified to the Commission as an initial determination. The Commission declined to review this initial determination, thus terminating the investigation as to the "textured" claims.

In Order No. 64, Samsung's motion for summary determination of invalidity of the "chemically engraved" claims (18-20 and 26-28) of the Hazani '904 patent was granted, also on the basis of anticipation by Kuo. The Commission reversed and remanded, holding that

even if it was undisputed that thermal oxidation was familiar to those of ordinary skill in the art at the time of the Kuo application, that fact does not lead to the conclusion that one of ordinary skill in the art would have invariably practiced Kuo using thermal oxidation, a requirement for finding a reference to be anticipating...While Dr. Caywood's declaration suggests that the use of thermal oxidation may have been obvious to one of ordinary skill in the art in view of the apparently widespread knowledge of the prior art Faraone process, obviousness is not the test under 35 U.S.C. 102(e), the statute applied to invalidate claims 18-20 and 26-28 in Order No. 64.

The Commission also "instruct[ed] the ALJ on remand to determine, as to each limitation and argument not specifically discussed in Order No. 64, whether the law of the case applies, or whether further consideration of claims 18-20 and 26-28 is warranted in light of the additional evidence submitted by complainants in response to Samsung's motion."

Legal Standards. Commission rule 210.18(b) provides that a summary determination:

shall be rendered if pleadings and any depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a summary determination as a matter of law.

19 C.F.R. 210.18(b). In deciding a motion for summary determination, the judge must view all evidence in the light most favorable to the nonmoving party, and all reasonable inferences must be drawn in favor of the party opposing the motion. Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1560 (Fed. Cir. 1988). Any doubt as to the existence of a genuine issue of material fact must be resolved in favor of the nonmoving party. Finish Engineering Co. v. Zerpa Indus., 806 F.2d 1041, 1043 (Fed. Cir. 1986).

A patent claim is anticipated under 35 U.S.C. § 102 and therefore invalid if a single prior art reference discloses each and every limitation of

the claim. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

A patent claim may be found obvious under Section 103, which provides, in part:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. § 103. Under Graham v. John Deere Co., 383 U.S. 1 (1966), four factual inquiries relating to obviousness must be made: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness, i.e., "secondary considerations." Id. at 17-18. A conclusion of obviousness requires a determination that the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. Uniroval Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051 (Fed. Cir. 1988). Further, it must be established that one skilled in the art would have been motivated to select and combine features from each cited reference in order to make the claimed invention at the time it was made. Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1270 (Fed. Cir. 1991).

The staff's motion regarding anticipation. In addition to supporting Samsung's obviousness theory (discussed below), the staff argued that the so-called chemically engraved claims are anticipated by Kuo because the term "chemically engraved" is irrelevant to the proper construction of these claims. The staff previously had advanced this theory, but neither Order No. 64 nor the Commission's review dealt with it.

Complainants argue that the staff has presented its theory before and that it appears to have been considered and adopted by the administrative law

judge, and that the staff therefore should not get a second bite at the apple. Order No. 64 was based on the theory that Kuo inherently disclosed the "chemically engraved" limitation because the most widely used manufacturing technique to create the disclosed asperities was thermal oxidation, a type of chemical engraving. The Commission reversed Order No. 64 because the asperities could have been formed by a method other than thermal oxidation, in which case chemical engraving would not be disclosed. The present theory of anticipation was not considered by the administrative law judge in Order No. 64. After consideration of OUII's arguments and the opposition of complainants, it is now found that it is irrelevant whether or not "chemically engraved" was disclosed in Kuo.<sup>1</sup>

The Kuo patent discloses the dielectric and second capacitor plate of the chemically engraved claims. That this is so can be seen by comparing claim 1 (representative of the textured claims) with claim 18 (representative of the chemically engraved claims):

Claim 1  
(textured claim)

A semiconductor memory cell including a capacitor is coupled to a field effect transistor (FET), said memory cell and said capacitor and said transistor are formed on a semiconductor substrate and wherein said capacitor is insulated from the control gate of said transistor, and said capacitor comprising:

[1] an electrically conductive polysilicon first plate having

Claim 18  
(chemically engraved claim)

An electrically readable and electrically writable semiconductor memory cell including a capacitor that is coupled to a field effect transistor (FET), said memory cell and said capacitor and said transistor are formed on a semiconductor substrate and wherein said capacitor is insulated from the control gate of said transistor, and said capacitor comprising:

a first plate of an electrically conductive material having a chemically

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<sup>1</sup> The cases cited by complainants in footnote 12 of their reply to the staff's position (e.g. Eli Lilly and Co. v. Home Ins. Co., 794 F.2d 710,717 (D.C. Cir. 1986) are inapposite. They hold that a litigant who fails to appeal an issue in an initial appeal cannot appeal that issue on a second appeal following remand. In this case, the staff was not in a position to appeal an issue that was not addressed in Order No. 64.

a surface that was textured to have a predetermined pattern;

[2] a first insulator constituting an oxide dielectric layer being disposed over and in contact with said textured surface of said polysilicon first plate;

a second insulator having at least one dielectric layer with a higher dielectric constant than the dielectric constant of said oxide layer, said second insulator being disposed along and in contact with said first insulator so that said first insulator is disposed between said first plate and said second insulator;

[3] a second plate of an electrically conductive material being disposed along and in contact with said second insulator to form a sandwich wherein said dielectric layers are disposed between said plates,

thereby said capacitor exhibiting increased capacitance and said capacitor exhibiting reduced charge transport capability between said plates so that it is lower than the charge transport capability characteristically exhibited by said first insulator alone in all modes of operation of said memory cell.

engraved surface of a predetermined pattern, said first plate forming storage node for said memory cell;

a first insulator constituting an oxide dielectric layer being disposed along and in contact with said engraved surface of said polysilicon first plate;

a second insulator having at least one dielectric layer with a higher dielectric constant than the dielectric constant of said first insulator, and said second insulator being disposed along and in contact with said first insulator so that said first insulator is disposed between said engraved surface of the first plate and said second insulator; and

a second plate of an electrically conductive material being disposed along and in contact with said second insulator to form a sandwich wherein said dielectric layers are disposed between said plates,

thereby said capacitor exhibiting increased capacitance and said capacitor exhibiting reduced charge transport capability between said plates so that it is lower than the charge transport capability characteristically exhibited by said first insulator alone in all modes of operation of said memory cell.

There is no material difference in elements [2] and [3] (the dielectric and the second capacitor plate, respectively) of each of these two claims. Because Kuo has been found to disclose these elements in the textured claims, application of the law of the case means that Kuo discloses the same elements

in the chemically engraved claims. Complainants do not dispute application of the law of the case doctrine to this extent.

The difference between the textured claims and the chemically engraved claims lies in element [1], the first capacitor plate, which is reprinted below with emphasis added:

(claim 1)

[1] an electrically conductive polysilicon first plate **having a surface that was textured** to have a predetermined pattern;

(claim 18)

a first plate of an electrically conductive material **having a chemically engraved surface** of a predetermined pattern, said first plate forming storage node for said memory cell;

Kuo discloses that

[f]loating gates ... are fabricated according to familiar techniques by depositing and patterning a first conductive layer, most commonly a doped polysilicon layer ... Asperities, or roughness, of the polysilicon-dielectric interfaces are relied upon to ... decrease the erase voltages required to reasonable levels.

Motion Ex. 2B, col. 3, ll. 53-56; col. 4, ll. 41-43.

In the Hazani patent, both the textured claims and the chemically engraved claims are exemplified in a single embodiment in the specification at column 7, lines 47-59. There, a thermal oxidation (chemical engraving) process results in a first plate that is "textured with asperities" and "covered with asperities". (Lines 51, 54.) In their prehearing statement, complainants also identify the same drawings in the Hazani patent as depicting both a textured surface and a chemically engraved surface. (Prehearing Statement at 40, 43, identifying figs. 12, 13a-c, and 15a-b of the Hazani patent.) The staff cites a number of instances where complainants have admitted that the asperity-covered plate at column 7 is a textured capacitor plate and a chemically engraved capacitor plate. See, e.g., complainants' prehearing statement at 24, 39-40, 43, 118; Hazani Deposition Tr. 131-34 (Complainants' Opp. Ex. 16).

In reversing Order No. 64, the Commission held that Kuo does not inherently disclose a chemically engraved plate. A capacitor plate can be textured without being chemically engraved, even though some capacitor plates may be textured and chemically engraved at the same time.

OUII contends that because the Hazani chemically engraved claims are product claims, the addition of a process element ("chemically engraved") to the claim is irrelevant and immaterial and does not impart patentability to the claim. Complainants argue that the process term "chemically engraved" is an essential limitation in the claims, which must be identically interpreted in considering infringement and validity. Complainants rely on Atlantic Thermoplastics Co. Inc. v. Faytex Corp., 970 F.2d 834, 23 USPQ2d 1481 (Fed. Cir. 1992), suggestion for rehearing in banc declined, 974 F.2d 1279, 23 USPQ2d 1801, 974 F.2d 1299, 24 USPQ2d 1138 (Fed. Cir. 1992), which represents one of two conflicting lines of Federal Circuit cases concerning product-by-process claims in an infringement context. Previously in Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 18 USPQ2d 1001, 18 USPQ2d 1896 (Fed. Cir. 1991), the Federal Circuit had held that the process term was not an essential limitation in product-by-process claims.

Because of the nature of the chemically engraved claims of the Hazani patent, this apparent conflict in precedents need not be addressed here. The Hazani chemically engraved claims are not product-by-process claims. They are product claims with an incidental process limitation. A product-by-process claim defines the invention solely or primarily in terms of process; a product claim defines the invention primarily in terms of its structure, although process words may be included. See fn. 9 of Atlantic Thermoplastics, 970 F.2d at , 23 USPQ2d at 1489. The chemically engraved claims define the invention primarily in terms of the structure, particularly when viewed in light of the specification. It is clear from the specification that the desired result of the thermal oxidation (chemical engraving) process is the formation of the

structural element of asperities on the capacitor plate. (Col. 7, ll. 47-59.) The process limitations "textured" and "chemically engraved" both refer to a capacitor plate that contains asperities. The capacitor described in these claims is not a product that requires definition by resort to process terms. It is not necessary to define the asperity ridden capacitor plate by a process, since the parties agree that one could achieve that structure, which is disclosed in Kuo, in many different ways. (Complainants' opposition at p. 3, Samsung reply memorandum at p. 5.)

Further, complainants' expert, Dr. Oldham, states in his expert report that the term "chemically engraving" is an alternative to the term "texturing". In answering the question "Is the process of chemically engraving adequately described in the patent specification?", Dr. Oldham states:

As already noted, examples of "texturing" are given, for example in column 7 of the specifications. The use of an alternative term, more specific with respect to the processes, therefore requires no elaboration in the specifications. The process described in the specifications uses standard chemical processing techniques to achieve the surface texture, and therefore is an example of chemical engraving.

...

In summary, the terminology "textured to have a predetermined pattern"...requires the construction of a surface with topography and in a pattern which is not unexpected. Similarly "chemically engraved surface of a predetermined pattern"...requires the construction of such surface using chemical processing (such as the chemical processing technique described in the specifications).

Complainants' Opposition Ex. 29 at p. 5, emphasis added. From this excerpt, it is clear that the desired surface structure may be described alternatively as textured or chemically engraved, and that it may be achieved by using standard chemical processing techniques.

The alleged process limitation (chemically engraved) on which complainants rely to establish novelty, is itself not novel. Dr. Caywood's declaration that thermal oxidation was "the most widely used method" for controlling roughness at the time of the Kuo application has not been

rebutted.<sup>2</sup> Dr. Oldham's statement, quoted just above, also refers to thermal oxidation as a "standard chemical processing technique[]".

Because the claims under consideration are product claims, the cases cited by the staff with respect to patentability are controlling, for example:

We think it well settled that the presence of process limitations in product claims, which product does not otherwise patentably distinguish over the prior art, cannot impart patentability to that product.

In re Stephens, 345 F.2d 1020, 1023 (C.C.P.A. 1965). "[P]atentability of a claim to a product does not rest merely on a difference in the method by which the product is made." In re Pilkington, 411 F.2d 1345, 1348 (C.C.P.A. 1969).

"Law of the case". Complainants argue that the law of the case precludes favorable consideration of the staff's anticipation motion because of Order No. 58. In that order, Samsung's motion for summary determination of non-infringement was denied. Samsung argued, among other things, that "chemically engraved surface" was an essential limitation that was not found in the accused Samsung devices. Samsung also argued that the chemically engraved claims were invalid as indefinite. Order No. 58 agreed with the staff that there was a genuine issue of material fact as to the proper construction of the term "chemically engraved surface of a predetermined pattern."

OUII has now persuasively argued that the term "chemically engraved" surface is irrelevant to proper construction of the claims at issue. This argument was previously made but not considered or ruled upon by the administrative law judge. Further, the prior arguments of Samsung and the staff with respect to infringement do not bind the administrative law judge in

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<sup>2</sup> Complainants argue that the process disclosed in the Faraone reference was novel and resulted in issuance of a patent. Dr. Faraone's declaration (Opposition Ex. 4, ¶ 4) states that "the fabrication process disclosed by the Faraone reference" would have been regarded as new information by the person of ordinary skill in the art between November 1986 and February 1987. This assertion falls short of contradicting Dr. Caywood. The Faraone process includes more than thermal oxidation and may be novel as a whole, but thermal oxidation is not asserted to be novel.

considering validity at this time. Law of the case does not prevent an administrative law judge from reconsidering an earlier ruling where appropriate, particularly when facts or law have become clarified. See 18 C. Wright et al., Federal Practice and Procedure § 4478; cf. Trustees of Indiana Univ. v. Aetna Cas. & Sur. Co., 920 F.2d 429, 435 (7th Cir. 1990), *overruled on other grounds*, 29 F.3d 274, 278 (7th Cir. 1994); Lovett v. General Motors Corp., 975 F.2d 518 (8th Cir. 1992). Here, since Order No. 58 was filed the issues have been substantially clarified by consideration of the OUII arguments and narrowed by the Commission's action with respect to the textured claims.

Obviousness under § 103. Complainants have raised genuine issues of material fact with respect to whether the chemically engraved claims are obvious in view of the prior art, including Kuo and Faraone. For example, complainants submitted declaration testimony to the effect that Kuo and Faraone do not constitute analogous art because the person of ordinary skill in the art would not look to Kuo to solve the problem with which Hazani was involved. Mr. Hazani's declaration asserts that Kuo and Faraone are addressed to the opposite problem and in fact teach away from the claimed invention by teaching how to increase charge transport between capacitor plates rather than to enhance charge storage capacity. (Complainants' opposition Ex. 3 at ¶ 8.) Samsung does not rebut these assertions. The "teaching" of the prior art is relevant to a consideration of obviousness; it is not enough that the prior art discloses the claimed structure, as is true for anticipation.

Like OUII, Samsung relies on law of the case doctrine to establish that Kuo discloses all elements of the chemically engraved claims except for "a first plate of an electrically conductive material *having a chemically engraved surface of a predetermined pattern*" (emphasis added). Samsung then argues that

the only issue remaining for decision in this investigation is whether the limitation ... that the textured surface is obtained

by chemical engraving would have been obvious in view of the combination of the Kuo '986 patent and an oxidation process, such as described in the Faraone reference.

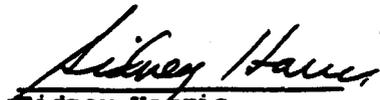
Reply at 2. This statement of the issue can be viewed as a restatement or variation of OUII's theory of the case: the addition of the chemically engraved limitation does not patentably distinguish the Hazani claim from the prior art structure of Kuo. As such, this argument is best analyzed under the law of anticipation: the claimed invention lacks novelty because the product claimed is fully disclosed by Kuo, and addition of a process element does not impart patentability to the claim. As an obviousness theory under § 103, Samsung's argument is unsatisfactorily truncated. It fails to address fully issues raised by complainants that were not decided previously and thus are not "law of the case". These include the arguably divergent teachings of the claimed invention and the prior art, and a determination of what constitutes relevant prior art under § 103.

Conclusions. Complainants have raised a genuine issue of material fact with respect to obviousness under § 103.

There is no dispute as to any material fact that the "chemically engraved" claims (18-20 and 26-28 of the '904 patent) describe a structure that is the same as that found in the prior art Kuo patent. There being no other patentable distinction between these claims and the prior art, it is found that these claims are anticipated under 35 U.S.C. § 102 by Kuo.

Motion No. 371-143 is denied; OUII's motion to find the claims in issue anticipated is granted.

There are no other remaining parties or issues in this investigation.  
Therefore, the investigation is terminated.<sup>3</sup>

  
Sidney Harris  
Administrative Law Judge

Issued: March 21, 1996

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<sup>3</sup> Pursuant to 19 C.F.R. § 210.42(h), this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.43, or the Commission, pursuant to § 210.44 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.43, 201.14, and 201.16(d).

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, DC 20436

In the Matter of

CERTAIN MEMORY DEVICES WITH  
INCREASED CAPACITANCE AND  
PRODUCTS CONTAINING SAME

Investigation No. 337-TA-371

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JUN 11 1995

COMMISSION OPINION

The Commission instituted this patent-based investigation, which concerns allegations of section 337 violations in the importation, sale for importation, and sale after importation of certain memory devices with increased capacitance, on February 6, 1995.<sup>1</sup> The notice of investigation named six groups of respondents: Mitsubishi, NEC, OKI, Samsung, Hitachi, and Hyundai.<sup>2</sup> Twenty-six claims -- claims 1-2, 4-23, and 25-28 -- of a single U.S. patent, U.S. Letters Patent 5,166,904 (the "'904 patent"), are at issue. The investigation was designated "more complicated" by the presiding administrative law judge (ALJ) on June 6, 1995. The 18-month statutory deadline for completion of the investigation is August 6, 1996.

Beginning in mid-October, 1995, the ALJ issued three initial determinations (IDs) (Orders Nos. 63, 64, and 65). Order No. 63, issued on October 13, granted a motion filed

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<sup>1</sup> 60 Fed. Reg. 7068-69.

<sup>2</sup> The investigation has been terminated as to Hyundai and Hitachi. See Notices dated June 21, 1995, and July 13, 1995, respectively.

by NEC for summary determination that claims 1-2, 4-13, 15-17, 22-25<sup>3</sup> of the '904 patent are invalid as anticipated. Order No. 64, issued on October 20, granted a motion filed by Samsung for summary determination that claims 18-20 and 26-28 are invalid as anticipated and terminated the investigation as to claim 21. Order No. 65, issued on October 30, granted motions filed by Mitsubishi, OKI, and NEC for summary determination of non-infringement as to claim 14, the only claim remaining in issue before the ALJ. The Commission determined not to review Orders Nos. 63 and 65. The Commission determined, however, to review in part and to remand Order No. 64 to the presiding ALJ.<sup>4</sup>

Order No. 64 granted a motion for summary determination (Motion Docket No. 371-123) filed by Samsung on September 18, 1995, that claims 18-20 and 26-28 of the '904 patent are invalid based on anticipation under 35 U.S.C. § 102(e)<sup>5</sup> by U.S. Letters Patent 4,758,986 to Clinton C.K. Kuo (the "Kuo patent").<sup>6</sup>

The Kuo patent, which was found by the ALJ to anticipate claims 1-2, 4-13, 15-17, 22-25 of the '904 patent discloses "asperities, or roughness of the polysilicon-dielectric

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<sup>3</sup> NEC's motion for summary determination and the ID granting the motion (Order No. 63) erroneously included claim 24, which is not in issue in this investigation.

<sup>4</sup> See Notice dated December 14, 1995.

<sup>5</sup> 35 U.S.C. § 102(e) provides:

A person shall be entitled to a patent unless --

\* \* \*

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for a patent . . . .

<sup>6</sup> Order No. 64 also terminated the investigation as to claim 21. That portion of the ID was not reviewed.

interface,"<sup>7</sup> but does not describe how the asperities it discloses are created. Kuo merely states that "the conditions under which both the polysilicon and the inter-layer dielectrics are formed influence, according to know[n] principles, the roughness of the interface."<sup>8</sup>

The declaration of respondents' expert, Dr. Caywood, states that in 1986-87 thermal oxidation<sup>9</sup> was the most widely used chemical engraving process to influence the roughness of the interfaces and the only process used in the production manufacturing of EEPROMs.<sup>10</sup> The application that matured into the Kuo patent was filed on February 20, 1987. Thus, according to Dr. Caywood, since thermal oxidation was the only production manufacturing process known at the time of the filing of the Kuo patent application, a person of ordinary skill in the art would have known that the asperities in Kuo were produced by thermal oxidation.

The declaration of complainants' expert, Dr. Uyemura, states that there were several other known methods for creating asperities in the 1987-88 time frame, viz., deposition at a specific temperature, doping, and the application of laser beams, none of which involved "chemical engraving."<sup>11</sup> Thus, according to complainants' expert, it would be possible to practice Kuo without necessarily using chemical engraving.

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<sup>7</sup> Kuo patent, col. 4., lns. 42-43.

<sup>8</sup> Id., 43-46.

<sup>9</sup> Dr. Caywood's declaration states that he construes the phrase "chemically engraved" in the same manner as complainants, to include "thermal oxidation." Id., para. 7b.

<sup>10</sup> Caywood Declaration, dated September 16, 1995, para. 10.

<sup>11</sup> Uyemura Declaration, dated September 28, 1995.

The ALJ recognized that there was a genuine factual dispute as to which techniques for creating asperities were familiar to the semiconductor industry at the time of the Kuo application.<sup>12</sup> He found, however, that thermal oxidation was "the most widely used among a small universe of techniques and well known to one of ordinary skill in the art," and concluded that the existence of "a handful of other possibilities does not negate anticipation."<sup>13</sup>

The ALJ noted Samsung's citation to Revlon v. Carson Products Co., 602 F.Supp. 1071 (S.D.N.Y. 1985), aff'd on other grounds, 803 F.2d 676 (Fed. Cir. 1986), cert. denied, 107 S.Ct. 671. Samsung cited the Revlon case in support of its argument that since Kuo discloses forming asperities by familiar manufacturing techniques, one of which is chemical engraving by thermal oxidation, the existence of other known techniques does not negate this disclosure.

In Revlon, the district court rejected the patentee's argument that the patent was not invalidated by a prior art reference disclosing a very wide spectrum of possible compounds including the claimed compound. The court stated: "the mention of 14 other possibilities does not negate our finding of anticipation." 602 F.Supp at 1085. However, Revlon, in contrast to the facts presented here, concerned whether one skilled in the art would recognize the claimed compound explicitly disclosed in the prior art reference among 130 other possibilities. As complainants note, Kuo provides no explicit disclosure that a chemically

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<sup>12</sup> Order No. 64, page 4.

<sup>13</sup> Id., page 5.

engraved surface of a predetermined pattern is present. Thus, Revlon is readily distinguished from the facts presented here.<sup>14</sup>

Patent law makes clear that a claim is invalid as anticipated only when a single prior art reference discloses each and every limitation of the claim. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047 (Fed. Cir. 1995). The disclosure need not be express, but may anticipate by inherency where the inherent property of a prior art reference would be appreciated by one of ordinary skill in the art. Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). However, in order for a claim or an element of a claim to be inherent in the prior art, it is not sufficient that a person following the disclosure sometimes obtains the result set forth in the claim; it must invariably happen. Standard Oil v. Montedison, 664 F.2d 356, 372, 212 USPQ 327, 343 (3rd Cir. 1981). The mere fact that a result may flow from a given set of circumstances is insufficient. In re Oelrich, 666 F.2d 578, 581, 212 USPQ2d 323, 326 (CCPA 1981).

As complainants note, the ALJ determined that there was a genuine factual dispute as to which techniques for creating asperities were familiar to the semiconductor industry at the time of the Kuo application. However, even if it was undisputed that thermal oxidation was familiar to those of ordinary skill in the art at the time of the Kuo application, that fact does not lead to the conclusion that one of ordinary skill in the art would have invariably practiced Kuo using thermal oxidation, a requirement for finding a reference to be anticipating. In re Oelrich, supra. While Dr. Caywood's declaration suggests that the use of thermal oxidation

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<sup>14</sup> Moreover, in Revlon, the court rendered its decision after having resolved all factual disputes in a trial on the merits. On a motion for summary determination, as here, any genuine issues of material fact must be resolved in favor of the non-movant.

may have been obvious to one of ordinary skill in the art in view of the apparently widespread knowledge of the prior art Farone process, obviousness is not the test under 35 U.S.C. § 102(e), the statute applied to invalidate claims 18-20 and 26-28 in Order No. 64.<sup>15</sup>

The IA and Samsung argue that a claim containing a generic claim element (according to the IA, the chemically engraved capacitor plate) can be anticipated by a prior art reference that discloses an example or species of that generic claim (the asperity ridden plate of Kuo), citing Application of Gostelli, 872 F.2d 1008, 1010 (Fed. Cir. 1989); Application of Slayter, 276 F.2d 408, 411 (CCPA 1960)<sup>16</sup>; Application of Ruscetta, 255 F.2d 687, 689-690 (CCPA 1958). The IA correctly states the law that a species disclosure in the prior art will prevent a patent from issuing on the entire genus.<sup>17</sup> However, the cited cases involve claims

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<sup>15</sup> 35 U.S.C. § 103, the statutory provision covering obviousness, provides as follows:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

<sup>16</sup> It is unclear whether the court in Slayter found invalidity based on anticipation or on obviousness, since both were cited by the court as reasons for upholding a rejection of the patent application. 276 F.2d at 410.

<sup>17</sup> Section 806.04(d) of the U.S. Patent and Trademark Office's Manual of Patent Examining Procedure (MPEP) states the following with regard to the definition of a generic claim:

It is not possible to define a generic claim with that precision existing in the case of a geometrical term. In general, a generic claim should include no material element additional to those recited in the species claims, and must comprehend within its confines the organization covered in each of the species.

determined by the fact finder to be in the relationship of genus to a species disclosed in the prior art. We note that the ALJ made no finding that the genus/species characterization of the chemically engraved capacitor plate of the '904 patent vis-a-vis the asperity ridden plate of Kuo would apply. Moreover, we think the IA's characterization is not necessarily correct. The Kuo disclosure of an asperities ridden polysilicon-dielectric interface could just as easily be deemed generic to the chemically engraved plate of the claims in issue, since chemical engraving is one of several possible ways of producing the Kuo asperities.

Since there is a genuine issue of material fact as to whether persons following the Kuo disclosure would inevitably obtain the claimed chemically engraved plate, summary determination that Kuo anticipates claims 18-20 and 26-28 was inappropriate.

According to the declaration of respondents' expert, Dr. Caywood, submitted in support of the Samsung motion for summary determination, the limitations of claims 18-20 and 26-28 differ from the limitations of the claims held to be anticipated in Order No. 63 in only one respect: claims 18-20 and 26-28 call for a first capacitor plate that has a "chemically engraved surface of a predetermined pattern," rather than a first capacitor plate that is "textured [to have a predetermined pattern of roughness or asperities]," as called for by the claims at issue in Order No. 63. The ALJ determined that complainants had not raised a genuine issue of material fact with respect to distinguishing the limitations of the claims at issue from the corresponding limitations of the claims found invalid in Order No.

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An example of the genus/species relationship in patent law would be the genus of wire paper clips having species differing in the manner in which the wire is bent in order to achieve a greater increase in its holding power.

63.<sup>18</sup> The question remains, however, whether the issues with respect to each of these limitations in claims 18-20 and 26-28 are the same as the issues presented to the ALJ with respect to the claims found to be invalid in Order No. 63. We therefore instruct the ALJ on remand to determine, as to each limitation and argument not specifically discussed in Order No. 64, whether the "law of the case" applies, or whether further consideration of claims 18-20 and 26-28 is warranted in light of the additional evidence submitted by complainants in response to Samsung's motion.<sup>19</sup>

In conclusion, we find that the ALJ erred in granting summary determination in Order No. 64 and remand that order (except for the portion of the order concerning claim 21) to him for further proceedings consistent with this opinion.

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<sup>18</sup> Order No. 64, page 6.

<sup>19</sup> See 18 Charles A. Wright et al., Federal Practice and Procedure § 4478 (1981).

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, DC 20436

In the Matter of

CERTAIN MEMORY DEVICES WITH  
INCREASED CAPACITANCE AND  
PRODUCTS CONTAINING SAME

Investigation No. 337-TA-371

**NOTICE OF COMMISSION DECISIONS  
REGARDING REVIEW OF  
THREE INITIAL DETERMINATIONS**

56  
15  
M1  
210

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Commission has determined not to review the initial determinations (IDs) issued by the presiding administrative law judge (ALJ) on October 13, 1995, and October 30, 1995 (Orders Nos. 63 and 65, respectively) and to review in part and remand the ID issued by the ALJ on October 20, 1995 (Order No. 64). The Commission determined to review all of Order No. 64 except for the portion of that ID concerning claim 21 of the patent in issue.

FOR FURTHER INFORMATION CONTACT: Mark D. Kelly, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-205-3106.

SUPPLEMENTARY INFORMATION: On January 30, 1995, the Commission ordered that an investigation be instituted to determine whether there are violations of section 337 of the Tariff Act of 1930, as amended, in the importation, sale for importation, or sale within the United States after importation of certain memory devices with increased capacitance and products

containing same by reason of infringement of certain claims of U.S. Letters Patent 5,166,904 (the '904 patent), owned by complainants Emanuel Hazani and Patent Enforcement Fund, Inc., and whether there exists an industry in the United States as required by subsection (a)(2) of section 337.

The Commission instituted an investigation of the complaint and published a notice of investigation in the Federal Register on February 6, 1995. 60 Fed. Reg. 7068. The following thirteen firms were named as respondents: Mitsubishi Electric Corporation, Tokyo, Japan; Mitsubishi Electronics America, Inc., Cypress, CA; NEC Corporation, Tokyo, Japan; NEC Electronics, Inc., Mountain View, CA; OKI Electronic Industry Co., Ltd., Tokyo, Japan; OKI America, Inc., Hackensack, NJ; Hitachi, Ltd., Tokyo, Japan; Hitachi America, Ltd., Tarrytown, NY; Samsung Electronics Co., Ltd., Seoul, Korea; Samsung Electronics America, Inc., Ridgefield Park, NJ; Samsung Semiconductors, Inc., San Jose, CA; Hyundai Electronics Industries Co., Ltd, Seoul, Korea; and Hyundai Electronics America, Inc., San Jose, CA. The complaint alleges that the respondents manufactured and imported 16- and 64-Mbit dynamic random-access memories (DRAMs) that infringe certain claims of the '904 patent.

On October 13, 1995, the ALJ issued an ID (Order No. 63) granting NEC's motion for summary determination of invalidity of claims 1-2, 4-13, 15-17, 22-25, based on anticipation by U.S. Letters Patent 4,758,986 to Kuo (the "Kuo patent").<sup>1</sup> On October 20, 1995, the ALJ issued an ID (Order No. 64) granting Samsung's motion for summary determination of invalidity of

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<sup>1</sup> Although claim 24 is included in Order No. 63, and in the motion forming the basis for that ID, the Commission notes that claim 24 was not alleged by complainants to have been infringed by any respondent herein, was not included in the Commission's notice of investigation, and is therefore not properly before the Commission.

claims 18-20 and 26-28 based on anticipation by the Kuo patent and terminating the investigation as to claim 21. On October 30, 1995, the ALJ issued an ID (Order No. 65) granting a motion for summary determination of non-infringement as to claim 14, the only remaining claim in issue. On November 22, 1995, the Commission issued a notice extending the deadline for deciding whether to review Orders Nos. 63, 64, and 65 to December 14, 1995.

This action is taken under the authority of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, and Commission rules 210.42 and 210.45, 19 C.F.R. §§ 210.42 and 210.45. Copies of the public versions of the Commission opinion issued in connection with the partial review and remand of Order No. 64, the ALJ's IDs, and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on the matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.



Donna R. Koehnke  
Secretary

Issued: December 15, 1995



PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

In the Matter of )  
 )  
CERTAIN MEMORY DEVICES WITH )  
INCREASED CAPACITANCE AND )  
PRODUCTS CONTAINING SAME )

Investigation No. 337-TA-371

NOV - 8 AM '95

Order No. 65: Initial Determination Granting Motion for Summary Determination of Non-infringement of Claim 14 of the Hazani '904 Patent

On September 22, 1995, respondents Mitsubishi Electric Corporation and Mitsubishi Electronics America, Inc. filed a motion for summary determination of non-infringement, or, in the alternative, invalidity of claim 14 of U.S. Patent No. 5,166,904 (Motion No. 371-124). On September 26, 1995, respondents OKI Electric Industry Co., Ltd. and OKI America, Inc., filed a motion for summary determination that claim 14 of U.S. Patent No. 5,166,904 is invalid and not infringed (Motion No. 371-126). On September 27, 1995, respondents NEC Corporation and NEC Electronics, Inc. filed a motion for summary determination of non-infringement of claim 14 of U.S. Patent No. 5,166,904 (Motion No. 371-127). Complainants oppose each motion, as does the Commission investigative staff.<sup>1</sup>

Commission rule 210.18(b) provides that a summary determination shall be rendered if pleadings and any depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any

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<sup>1</sup> The following motions for leave to file replies are granted:  
Motion No. 371-137 (NEC)  
Motion No. 371-135 (Mitsubishi)  
Motion No. 371-138 (Mitsubishi)  
Motion No. 371-136 (OKI, joined by NEC).

material fact and that the moving party is entitled to a summary determination as a matter of law.

19 C.F.R. 210.18(b). In deciding a motion for summary determination, the judge must view all evidence in the light most favorable to the nonmoving party, and all reasonable inferences must be drawn in favor of the party opposing the motion. Avia Group Int'l. Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1560 (Fed. Cir. 1988). Any doubt as to the existence of a genuine issue of material fact must be resolved in favor of the nonmoving party. Finish Engineering Co. v. Zerpa Indus., 806 F.2d 1041, 1043 (Fed. Cir. 1986).

The dispute involved in this motion does not concern the structure of respondents' DRAMs, as to which there is agreement among the parties, but rather whether the structures are covered by claim 14 as properly construed. Claim construction is a question of law. Markman v. Westview Instruments, Inc., 52 F.2d 967, 983-4 (Fed. Cir. 1995). Extrinsic evidence may be considered to better understand a patent, but the primary sources of the meaning of a patent claim are the claims themselves, the specification, and the prosecution history. Markman, 52 F.3d at 979-981. After the claim is construed it is compared with the accused device to determine infringement. "[I]n order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device." Lemelson v. U.S., 752 F.2d 1538, 1551 (Fed. Cir. 1985); London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991). "There can be no infringement as a matter of law if a claim limitation is totally missing from the accused device." London, 946 F.2d at 1539.

Construction of Claim 14.

Claim 14 is dependent on claim 13, which in turn is dependent on claim 1. Both claims 1 and 13 have been found to be invalid in Orders 59 and 63.<sup>2</sup>

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<sup>2</sup> Still pending are motions for a summary determination of non-infringement of claim 1, which if granted would require a finding of non-infringement of claim 14 as well. This initial determination does not decide the earlier motion with respect to non-infringement of claim 1.

To understand and construe claim 14, claim 13 should first be considered. Claim 13 covers the memory cell of claim 1 in an array of such cells in rows and columns on a semiconductor substrate. Claim 13 requires the control gate of the memory cell transistor to be "connected by a second conductive connecting means to the control gates of [a] plurality of similar transistors that are associated with adjacent memory cells within only one given row...." Additionally, claim 13 requires that said transistor "includes a first impurities terminal integrally formed in said substrate..." and that "said first impurities terminal of said transistor within a given cell is connected by a third conductive connecting means to similar first impurities terminals of [a] plurality of similar transistors that are associated with adjacent memory cells within only one given column...." (Emphasis added.)

Claim 14 provides as follows:

The array of claim 13 wherein said second conductive connecting means is a word line of said array that is insulatively disposed over said substrate and said third conductive connecting means is a bit line of said array that is integrally formed in said substrate; and

wherein said bit line comprising impurities and is adjacent to and continuous with said first impurities terminals within a given column.

The language of claim 14 provides for two types of lines: an insulated line that runs over the substrate (the word line), and a line that is formed in the substrate (the bit line).<sup>3</sup> At issue in these motions is the bit line.

NEC refers to the claimed bit line as a "diffused" bit line. NEC's expert, Dr. Gosney, states that the bit line described in claim 14 "is and was commonly known to one of ordinary skill in the DRAM art as a diffused bit line." Gosney decl. ¶ 9. A diffused bit line is one in which "a diffused interconnection was formed by diffusing impurities into the silicon surface."

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<sup>3</sup> Because a word line connects the memory cells in a given row, and a bit line connects the memory cells in a given column, the selection of a specific word line and a specific bit line identifies a discrete memory cell at the intersection of the selected row and column.

Id. This type of line is also referred to as an "impurities bit line" (see, e.g., NEC reply at p. 2) or as an "n+ bit line" (e.g., at col. 16 ll. 27-28 of the Hazani '904 patent). NEC argues that the diffused bit line of claim 14 must be wholly contained in the substrate. Motion, p. 4.

Dr. Gosney states that "diffused bit lines were replaced by polysilicon bit lines ... in the late '70's, and later ... by metal silicide (polycide) bit lines. A polysilicon or polycide bit line is formed over an insulating layer which separates it from the substrate." Gosney decl. ¶ 9. NEC argues that it uses this later type of bit line, specifically a tungsten polycide bit line "insulatively disposed over" the substrate. See Gosney decl. ¶ 10. Such a line is also referred to at times as a metal bit line. See e.g. col. 16, l. 27 of the Hazani '904 patent; NEC reply at p. 7. The fact that the polycide bit line connects with the transistor source/drain diffusion terminals (i.e., impurities terminals) in the substrate does not change the understanding of one skilled in the DRAM art that the polycide bit line is not a diffused bit line, according to Dr. Gosney. Gosney decl. ¶ 9.

Complainants assert that the person of ordinary skill in the art would understand claim 14 to cover a bit line that is a hybrid or combination of impurities portions and metal portions, and that the impurities bit line need not comprise the entire bit line. Thus, an impurities terminal formed in the substrate and shared by two adjacent transistors provides an interconnection between the transistors that can be termed an "impurities bit line." See Hazani decl. ¶ 5; Greene decl. ¶¶ 7, 8. Complainants point in particular to the following language found in the Hazani '904 patent specification at col. 16, ll. 25-33:

Metal layers 45, for example of aluminum are then formed and patterned to form the column bit-lines. Each metal bit-line connects to a separate n+ bit-line 28 every several word-lines, through a contact opening in the field oxide. This is done in order to shunt the n+ higher resistance in order to prevent an undesired voltage drop between a selected cell and ground or the path between the selected cell and the sense-amplifier.

Complainants argue that this excerpt "clearly describes a 'bit line' as an n+ [impurities] bit line and a metal bit line." Opposition, p. 13. Complainants call the combined metal/impurities bit line an "array bit line" (a term not used in the patent) and argue that the combined array bit-line architecture is covered by claim 14. Opposition, p. 9. Complainants assert that the metal portions of the array bit line cooperate with the impurities portion to "shunt" the undesired higher resistance of the impurities region portions of the bit lines. Opposition, p. 10.

Complainants' interpretation of this excerpt is a distortion of the plain meaning of the words appearing there, and must be rejected. This excerpt clearly does not describe "a" bit line with both metal portions and impurities portions. It describes a metal bit-line connecting to a separate n+ bit-line. The excerpt clearly implies that the n+ bit line provides an electrical path from a selected cell to ground, or between the selected cell and the sense-amplifier. In other words, the n+ bit line is a complete bit line; it is not a partial bit line.

If on the strength of this excerpt claim 14 were construed to cover the use of a metal portion in place of an impurities portion of a bit line, rather than in addition to it (as described in col. 16), the claim could not be construed to cover a bit line in which the impurities portions interconnected only adjacent pairs of memory cells. This is so because of the explicit requirement of claim 13 that

said first impurities terminal of said transistor within a given cell is connected by a third conductive connecting means [i.e., the impurities bit line in claim 14] to similar first impurities terminals of [a] plurality of similar transistors that are associated with adjacent memory cells within only one given column...." (Emphasis added.)

A plurality means more than one. The requirements of claim 13 which are incorporated in claim 14 mean that the impurities bit line of claim 14 must at a minimum connect a source/drain impurities terminal to more than one other such terminal in the column. A source/drain impurities terminal lying between

two adjacent cells connects one cell to the other, but not to a plurality of adjacent cells in the given column.

Claim 14 requires both a "first impurities terminal" and a "bit line comprising impurities...adjacent to and continuous with said first impurities terminals within a given column." Thus, the first impurities terminal and the impurities bit line are two separate elements and each must be found in the accused device in order to find infringement. To merge them as complainants argue so that the presence of one structural element satisfies the requirements of two claim limitations would do violence to the language of claims 13 and 14 and cannot serve as a basis for finding infringement. See Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1561-2, 19 USPQ2d 1500, 1503 (Fed. Cir. 1991).

#### Infringement

##### NEC's accused devices.

Complainants do not specifically compare the limitations of claim 14 to the NEC DRAMs. Complainants argue at one point that:

the NEC HSG DRAMs should clearly fall within the scope of claim 14, as properly construed, because the NEC DRAM bit line architecture is similar to that disclosed in the '904 patent and includes an impurities bit line which is integrally formed in the substrate.

Opposition, p. 14. Infringement is determined by comparing the accused product not with a preferred embodiment described in the specification, as complainant has done, but with the properly and previously construed claims.

Environmental Design v. Union Oil Co. of Cal., 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983); Zygo Corp. v. Wyko Corp., 29 USPQ2d 1161, 1170 (D. Ariz. 1993).

The assertions of complainants' expert Mr. Greene relating to infringement are premised on

C

C

but this is

insufficient to establish infringement of claim 14 as construed above. There

is no showing that the NEC DRAMs connect a source/drain impurities terminal

C as required by claim 14.

Complainants point only to the first impurities region of the memory cell transistors as the impurities bit line. Thus, an element of the claim is missing from the accused NEC DRAMs and a finding of infringement is precluded.

Mitsubishi's accused device.

The Mitsubishi 64 megabit DRAM C

C

C

C

Id.,

¶ 8.

Complainants' argument and Mr. Greene's declaration in support of infringement by Mitsubishi again assert without support in the patent documents that

C

C

Greene decl. ¶ 6. For the

reasons stated above, claim 14 cannot be construed in such a manner. C

C

Accordingly, a

required element of claim 14 is missing and infringement cannot be found.

OKI's accused devices.

C

C

C

Complainants rely on the same argument with respect to the source/drain impurities region interconnecting two adjacent memory cells. For the reasons stated, this construction of the claim is insupportable and cannot lead to a finding of infringement. No other impurities bit line is present. This required element is missing from the accused device and therefore infringement cannot be found.

No genuine issue of material fact.

As stated above, there is no dispute about the structures which are actually present in the respondents' DRAMs, insofar as they relate to claim 14. The dispute is one of claim construction. Complainants attempt to raise a factual issue relating to claim construction through the declarations of Greene and Hazani. Mr. Greene asserts that one of ordinary skill in the art would understand claim 14 to cover respondents' DRAMs "even though they have a 'metal bit line' in conjunction with the requisite impurities bit line." As construed herein, the presence or absence of the metal bit line is irrelevant. What matters is whether the respondents' products contain the claim elements with respect to the impurities bit line.

The Commission investigative staff argues that summary determination is precluded at this time because there is a genuine issue as to how one of ordinary skill in the art would construe claim 14. However, as pointed out by respondents, claim construction is a matter of law. Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995). Expert opinions on the understanding of one skilled in the art with respect to claim construction do not raise a genuine issue of material fact in the face of the clear objective language of the patent claim and specification. This rule and its rationale were explained in Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1578 (Fed. Cir. 1995):

Because the meaning of "sputter-deposited dielectric" as used in claim 14 is clear from the prosecution history of the '745 patent, Southwall's expert affidavits cannot alter that meaning. Even if Southwall could show that "sputter-deposited dielectric" has a meaning to one skilled in the art different from the definition in the '745 specification and file history, the definition in the patent documents controls the claim interpretation. See Markman, 52 F.3d at 981. Thus, we may not consider Southwall's opinion expert testimony as we interpret claim 14 as a matter of law. Because the expert testimony is entitled to no weight, it cannot create a genuine issue of material fact precluding summary judgment. Claim interpretation, as a question of pure law, is amenable to summary judgment and disagreement over the meaning of a term within a claim does not necessarily create a genuine issue of material fact. (Citation omitted.) Any other rule would be unfair to competitors who must be able to rely on the patent

documents themselves, without consideration of expert opinion that then does not even exist, in ascertaining the scope of a patentee's right to exclude.

In this case, it is found that the language of the claims and specification is clear. The expert opinion testimony that appears to create an issue as to the understanding of one skilled in the art is entitled to no weight. Similarly, the litigation-induced declaration of the inventor as to what he meant a patent claim to cover should not be relied on to support a construction at odds with the clear language of the claims and specification. Markman, 52 F.3d at 983. Thus the declaration of Mr. Hazani is entitled to no weight on this point, and does not raise a genuine issue of material fact.

#### Validity

As construed herein, claim 14 is not anticipated by the Kuo '986 patent, because Kuo does not disclose an impurities bit line as required by claim 14. Kuo discloses a polysilicon bit line. Gosney decl. ¶ 10.

OKI makes the additional argument that even as properly construed, claim 14 is obvious under 35 U.S.C. § 103 in view of Kuo or Kuo in combination with other prior art. In light of the findings made hereinabove, the question of obviousness will not be reached at this time.

#### Conclusion

This initial determination does not reach the issue of whether complainants' infringement contentions were untimely because they were not properly set forth in the Prehearing Statement.

There is no genuine issue of material fact preventing the conclusion that complainants have failed to establish that claim 14 of the '904 patent is infringed by any of the DRAMs in issue.

Motion Nos. 371-124, 371-126, and 371-127 are granted with respect to noninfringement and denied with respect to invalidity. Because all claims in

issue now have been found to be either invalid or not infringed, the investigation is terminated.<sup>4</sup>

  
\_\_\_\_\_  
Sidney Harris  
Administrative Law Judge

Issued: October 30, 1995

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<sup>4</sup> Pursuant to 19 C.F.R. § 210.42(h), this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.43, or the Commission, pursuant to § 210.44 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.43, 201.14, and 201.16(d).

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

**PUBLIC INFORMATION**

In the Matter of )  
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CERTAIN MEMORY DEVICES WITH )  
INCREASED CAPACITANCE AND )  
PRODUCTS CONTAINING SAME )

Investigation No. 337-TAG-371

U.S. INTERNATIONAL TRADE COMMISSION  
NOV - 8 1995

Order No. 64: Initial Determination Granting Motion for Summary Determination of Invalidity of Claims 18-20 and 26-28 of the Hazani '904 Patent and Termination of the Investigation as to Claim 21

On September 18, 1995, respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Semiconductor, Inc., filed a motion for summary determination that claims 18-20 and 26-28 of U.S. Patent No. 5,166,904 are invalid as anticipated by the prior art. (Motion No. 371-123). Respondents OKI Electric Industry Co., Ltd. and OKI America, Inc. filed a joinder in the motion. Complainants oppose the motion. The Commission investigative staff supports the motion.

Respondents Mitsubishi Electric Corporation and Mitsubishi Electronics America, Inc., filed a statement in support of Samsung's motion that included a motion that claim 21 also be declared invalid as anticipated by the prior art. This motion which was opposed by complainants was not assigned a separate docket number.

The following motions for leave to file supplemental papers are granted:

- 371-129: Samsung's motion for leave to file a reply to complainants' opposition
- 371-131: Complainants' motion for leave to file complainants' surreply and reply to staff's response
- 371-133: Samsung's motion for leave to file a response to complainants' surreply
- 371-139: Complainants' motion for leave to file complainants' reply to Samsung's response to complainants' surreply.

Additionally, Mitsubishi filed a reply paper without a covering motion for leave to file, which was read but not relied on by the administrative law judge.

Commission final rule 210.18(b) provides that a summary determination shall be rendered if pleadings and any depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a summary determination as a matter of law.

19 C.F.R. 210.18(b). In deciding a motion for summary determination, the judge must view all evidence in the light most favorable to the nonmoving party, and all reasonable inferences must be drawn in favor of the party opposing the motion. Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1560 (Fed. Cir. 1988). Any doubt as to the existence of a genuine issue of material fact must be resolved in favor of the nonmoving party. Finish Engineering Co. v. Zerpa Indus., 806 F.2d 1041, 1043 (Fed. Cir. 1986).

A patent claim is anticipated and therefore invalid if a single prior art reference discloses each and every limitation of the claim. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995). "The disclosure need not be express, but may anticipate by inherency where it would be appreciated by one of ordinary skill in the art." Id., citing Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). That a claim limitation is inherently disclosed by the prior art reference may be shown by extrinsic evidence. Id.

Samsung asserts that claims 18-20 and 26-28 differ from the claims held to be anticipated in Order No. 59 in only one respect: they require a "chemically engraved surface" rather than a textured surface. Samsung argues that the only place in the Hazani '904 patent where a chemically engraved surface is disclosed is at column 7 of the specification, which discloses the formation of asperities by a process of thermal oxidation. Thermal oxidation was a technique widely used and published by Dr. Lorenzo Faraone and others in

the 1980s. Motion Ex. 3, Caywood decl. ¶ 9 and Attachment D; Motion Ex. 6, Greene Depo. Tr. 833-835; Motion Ex. 8, Hazani Depo. Tr. 130-134.

The prior art Kuo '986 patent discloses a polysilicon floating gate (col. 3, ll. 53-56) with "asperities or roughness" at the polysilicon-dielectric interface (col. 4, l. 41). Kuo states that "the conditions under which both the polysilicon and the inter-layer dielectrics are formed influence, according to know[n] principles, the roughness of the interfaces." Col. 4, ll. 43-46. Kuo states further that the memory cell disclosed therein "uses only manufacturing techniques which are familiar in the semiconductor industry." Col. 8, ll. 45-47.

Kuo does not explicitly disclose a first plate having a "chemically engraved surface of a predetermined pattern."

Samsung argues that at the time the Kuo application was filed, the only "familiar manufacturing technique" for producing asperities or roughness was thermal oxidation, which admittedly is a type of chemical engraving. Motion Ex. 8, Hazani Depo. Tr. 134. Dr. Caywood, Samsung's expert, states that this was the "most widely used method...to influence the roughness of the interfaces" and "the only process used in production manufacturing of EEPROMs in 1986-87." Caywood decl., ¶ 10. Therefore, Kuo's disclosure of producing asperities or roughness by familiar manufacturing techniques is necessarily a disclosure of chemical engraving by thermal oxidation. The person of ordinary skill in the art in 1987 (the time of the Kuo application) would have understood that the asperities in Kuo were produced by thermal oxidation, the proven manufacturing technique at the time. Caywood decl., ¶ 11.

Complainants attempt to raise an issue of fact by showing that there were several other methods for creating asperities or roughness in 1987-88. Complainants point out that in an earlier declaration, Dr. Caywood asserted that "various methods for creating the asperities...were well known in the art by 1988." Caywood decl., ¶ 8a, Ex. 2 to complainants' response to the motion.

Complainants' expert Dr. Uyemura also asserts that there were several manufacturing techniques for making asperities at the time of the Kuo application. Uyemura decl., ¶ 5. These other techniques, such as deposition at specified temperatures, doping, or application of laser beams, do not involve thermal oxidation or chemical engraving. Thus, it would be possible to practice Kuo, including the use of asperities or roughness produced by familiar techniques, without necessarily using chemical engraving.

Samsung does not dispute the existence of techniques other than thermal oxidation, but argues that the techniques outlined by complainants were "experimental" or "lab techniques", not "manufacturing techniques...familiar in the semiconductor industry" at the time of the Kuo application. Samsung also asserts that Dr. Uyemura lacks credibility on this issue and that his declaration should be accorded little weight. This argument must be rejected. Assessing credibility or weighing evidence is improper on a motion for summary determination. All doubts must be resolved in favor of the non-movant.

It appears that there is a genuine factual dispute regarding the extent to which certain techniques were "familiar manufacturing techniques" in the semiconductor industry, or whether the Faraone thermal oxidation process was the only familiar technique for producing asperities. However, the Faraone process clearly was familiar; complainants do not dispute Dr. Caywood's assertion that it was "the most widely used method" for controlling roughness. Hazani himself used this process and described it in column 7 of the '904 patent. Complainants' expert, Mr. Greene, could recall at his deposition no other technique for creating asperities in 1987. Motion Ex. 6, Depo. Tr. 834-835. The papers relating to this motion clearly suggest that the Faraone process was the most familiar process for creating asperities. Complainants argue that since there were other techniques for creating asperities, Kuo does not anticipate Hazani.

Samsung, on the other hand, cites Revlon, Inc. v. Carson Products Co., 602 F.Supp. 1071 (S.D.N.Y. 1985), aff'd on other grounds, 803 F.2d 676 (Fed. Cir. 1986), cert. denied, 107 S.Ct. 671, for the proposition that the existence of other techniques for forming the asperities disclosed in Kuo does not negate the fact that Kuo discloses forming asperities by familiar manufacturing techniques, one of which unarguably is chemical engraving by thermal oxidation. In Revlon, the patentee argued that the prior art reference disclosed "145 possible nitrogen compounds of which 15 were reported to be successful (including guanidine) and that such a wide spectrum of possibilities cannot anticipate a specific formula." 602 F.Supp. at 1084-85. The court found that the guanidine formulation did anticipate, and that "the mention of 14 other possibilities...does not negate our finding of anticipation." 602 F.Supp. at 1085.

Here, Kuo discloses a structure with asperities or roughness. This structure has been found to anticipate the Hazani claims requiring a "textured" plate. Kuo says the asperities are made by familiar manufacturing techniques. One such technique--the most widely used among a small universe of techniques, and well known to one of ordinary skill in the art--is thermal oxidation, the same technique used by Hazani. This technique results in a plate that is both "textured" and "chemically engraved," as claimed by Hazani. That there are a handful of other possibilities for making the asperities does not negate a finding of anticipation. Kuo discloses a specific example of the structure later claimed by Hazani as having a "chemically engraved" plate. Thus, Kuo discloses the "chemically engraved" limitation of Hazani claims 18-20 and 26-28.

Samsung asserts that the remaining limitations of these claims are identical to the limitations of claims found to be invalid as anticipated by the Kuo '86 patent in Order No. 59. See Caywood decl. ¶ 7c, Motion Ex. 3. See also Motion Ex. 4, charting the correspondence between the claims at issue

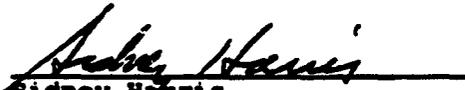
herein and those found invalid in Order No. 59. Complainants do not raise a genuine issue of material fact with respect to distinguishing these limitations from those already found invalid.<sup>1</sup>

Therefore, there is no dispute as to any material fact that: (1) what is claimed in claims 18-20 and 26-28 of the '904 patent is disclosed in the Kuo patent, and (2) the Kuo patent is prior art under § 102 which anticipates the above listed claims of the '904 patent.

Claim 21. Claim 21 is within the scope of the Notice of Investigation, but complainants have dropped their allegation of infringement of claim 21 by any respondent. On that basis, complainants argue that it is inappropriate to make a finding on the validity of claim 21.

In their Prehearing Statement, complainants do not assert infringement of claim 21. Claim 21 has effectively been withdrawn from consideration in this investigation and no finding will be made as to its validity. The investigation is terminated as to claim 21.

Claims 18-20 and 26-28 of the '904 patent are anticipated under 35 U.S.C. § 102 and are therefore invalid. Motion No. 371-123 is therefore granted.<sup>2</sup>

  
Sidney Harris  
Administrative Law Judge

Issued: October 20, 1995

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<sup>1</sup> Complainants reargue some points that were decided in Orders 59 and 63. (Order No. 63 was issued after complainants filed their papers relating to this motion.) These issues will not be reconsidered herein.

<sup>2</sup> Pursuant to 19 C.F.R. § 210.42(h), this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.43, or the Commission, pursuant to § 210.44 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.43, 201.14, and 201.16(d).

**PUBLIC VERSION**

**UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.**

**PUBLIC INSPECTION**

In the Matter of )  
)  
**CERTAIN MEMORY DEVICES WITH )  
INCREASED CAPACITANCE AND )  
PRODUCTS CONTAINING SAME )**

95 NOV -8 11:28  
U.S. ITC  
Investigation No. 337-TA-371

**Order No. 63: Initial Determination of Invalidity of Claims 1, 2, 4-13, 15-17, and 22-25 of the Hazani '904 Patent and Denial of Motion for Reconsideration**

On September 22, 1995, complainants Emanuel Hazani and Patent Enforcement Fund, Inc., filed a motion for reconsideration of Order No. 59 (Motion No. 371-125). The motion is opposed by all respondents and by the Commission investigative staff.

On October 3, 1995, complainants filed a motion for leave to file a reply memorandum in support of their motion to reconsider (Motion No. 371-130). On October 5, the OKI respondents filed a motion for leave to file a surreply in further opposition to the motion to reconsider (Motion No. 371-134). Motions 371-130 and 371-134 are granted.

**I. Reconsideration Is Inappropriate**

In the September 12, 1995, telephone conference at which the rulings contained in Order No. 59 were announced, complainants were permitted to file a motion to reconsider that order. Order No. 59 was not certified to the Commission as an initial determination in order to allow the administrative law judge to entertain the motion to reconsider. The technology in this investigation is complex, and if Order No. 59 contained any manifest error of fact or law, it was the desire of the administrative law judge to correct it before certifying the matter to the Commission.<sup>1</sup>

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<sup>1</sup> This procedure could avoid the need for a remand in the event complainant could show that reconsideration is appropriate and summary determination should not be granted.

As pointed out by OKI, motions for reconsideration serve a limited function:

to correct manifest errors of law or fact or to present newly discovered evidence. Such motions cannot in any case be employed as a vehicle to introduce new evidence that could have been adduced during pendency of the summary judgment motion. The non-movant has an affirmative duty to come forward to meet a properly supported motion for summary judgment. . . . Nor should a motion for reconsideration serve as the occasion to tender new legal theories for the first time.

Publishers Resource, Inc. v. Walker-Davis Publications, Inc., 762 F.2d 557, 561 (7th Cir. 1985)

(quoting Keene Corp. v. International Fidelity Ins. Co., 561 F. Supp. 656, 665-66 (N.D. Ill. 1982), aff'd, 736 F.2d 388 (7th Cir. 1984)).

In this case Complainants have not shown any manifest error of fact or law in Order No. 59 or presented any newly discovered evidence, not previously available to them. Their argument is principally that the clause at the end of the claims in suit which the parties have referred to as the "thereby" clause, has independent substantive content not found in the body of the claims. Some aspects of complainants' arguments are raised for the first time in the motion for reconsideration, although there is no apparent reason why the arguments could not have been made earlier. Some newly-raised theories are contrary to positions previously taken by complainants.

Further, Order No. 59 was issued after the parties had filed their prehearing statements in preparation for a hearing in this matter which was to commence on September 18, 1995.<sup>2</sup> The Administrative Law Judge's Ground Rule 4d requires that the prehearing statement of a party contain:

a statement of the issues to be considered at the hearing that sets forth with particularity a party's contentions on each of the proposed issues, including citations to legal authorities in support thereof. Any contentions not set forth in detail as required herein shall be deemed abandoned or withdrawn, except for contentions of which a party is not aware and could not be aware in the exercise of reasonable diligence at the time of filing the prehearing statement. (Emphasis added)

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<sup>2</sup> The hearing has since been postponed to November 6, 1995.

The Complainants' prehearing statement filed September 5, 1995, does not contain the current views or theories now being advanced in the motion for reconsideration. Therefore, the motion to reconsider requests relief which would conflict with Ground rule 4d.

Complainants, as discussed below, also improperly attempt to create an issue of fact by submitting a new declaration of Mr. Greene that contradicts his prior deposition testimony. This is impermissible. See Military Servs. Realty, Inc. v. Realty Consultants of Va., Ltd., 823 F.2d 829, 832 (4th Cir. 1987); Adelman-Tremblay v. Jewel Cos., 859 F.2d 517, 521 (7th Cir. 1988).

## **II. Even If Reconsideration Were Granted, The Ruling On The Motion For Summary Determination Would Not Change**

The arguments advanced by complainants to show disputes of material facts, or legal arguments to support their view that summary determination should not be granted, are as follows:

### **A. The Patentable Features of the Hazani Capacitor are not Inherent in the Kuo Tunneling Structure**

Complainants assert that Hazani claims a "storage capacitor" that always stores charge, like a bucket, in all modes of operation, never "tunneling" or transporting charge from one plate to another, and that Kuo discloses a tunneling structure with asperities to enhance charge transport, or transmission of charge between two plates. Therefore, complainants contend that Kuo discloses no structure that can properly be called a "capacitor" in all modes of operation.

Complainants cite no authority for the proposition that a capacitor never conducts charge between the two plates when it is functioning as a capacitor. Samsung submitted a dictionary excerpt which states what is commonly known about capacitors that "all dielectric materials conduct to a certain extent, although the resistance is high." (Samsung response, Ex. 1.)

More importantly, as pointed out by respondents, the Hazani '904 patent claims do not require that the capacitor not transport charge in all modes of operation. Rather, the claims (in the "thereby" clause) require reduced charge transport capability between the plates, when compared to a

capacitor using an oxide insulator (dielectric) alone. This result - reduced charge transport capability - is inherent in the use of an oxide-nitride-oxide ("ONO") dielectric structure in a capacitor, as disclosed in Kuo. See paragraph 8(d) of Dr. Caywood's original declaration in support of NEC's motion for summary determination, also attached as Ex. 1 to the Appendix to complainants' motion to reconsider Order 59. See also the prosecution history of the parent of the '904 patent in which Mr. Hazani states that reduced charge transport capability is "accomplished mainly by the addition of the nitride layer" in the dielectric. (Ex. 4 to Samsung response, pp. 9-10.)

Complainants also assert, for the first time, that novelty is found in the presence of two textured plates. Aside from the untimeliness of this theory, it is contradicted by the plain language of the claims in issue, and by complainants' own expert witness statements, attached to its prehearing statement as exhibits C and D. ("Certain claims of the patent '904 describe capacitors with a textured surface on one of the capacitor plates." Ex. C at 2. "The 904 patent claims use the terms 'textured' and 'chemically engraved' with respect to the surface of one of the capacitor plates." Ex. D at 4.)

**B. The Record Does Not Support a Finding that the Hazani Claims Are Inherent in the Disclosures of the Kuo Patent**

Complainants repeat their contention that one skilled in the art would not conclude that the elements of the "thereby" clause (increased capacitance and decreased charge transport [capability]) were necessarily present in Kuo. Complainants assert that respondents have ignored the allegedly "crucial" aspect of the Hazani patent found in the "thereby" clause: "the fact that it acts as an improved capacitor 'in all modes of operation.'"

Respondents did not ignore the "all modes of operation" language. Dr. Caywood's original declaration went to "each and every" claim element of the enumerated claims. It included a claim chart that explicitly recited the "all modes of operation" language.

Order No. 59 relied in part on Mr. Greene's deposition testimony that the use of the Kuo structure would inherently result in the two functional effects of the "thereby" clause (increased capacitance and decreased charge transport capability). That testimony was as follows:

Q. I'm not now asking whether Kuo teaches or even refers to those two effects at all, okay?

A. Right.

Q. I'm asking whether—I'm asking for you to analyze the Kuo structure and tell me whether use of the Kuo structure would have the effect, recognized or not, inherently of increasing capacitance by use of the asperities and the ONO dielectric?

A. Yes, within—within an EEPROM, within the EEPROM disclosed in the '86, that effect would have happened, yes.

Q. And similarly would the second effect of using the ONO dielectric; i.e., said capacitor exhibiting reduced charge transport capability between said plates so that it is lower than the charge transport capability characteristically exhibited by first—said first insulator alone, would that effect have inherently resulted in the Kuo structure, whether it was recognized or not?

MR. SMITH: This is the last question.

THE WITNESS: Yes.

Depo. Tr. 701-702.

Paragraph 5 of Mr. Greene's declaration, submitted with the motion to reconsider, clarifies this testimony. There he explains that he understood the phrase "whether recognized or not" in the question to mean that it did not matter what a person of ordinary skill in the art in 1988-89 would have recognized. (The Kuo patent issued in July 1988.) His admission that increased capacitance and decreased charge transport capability were inherent in the Kuo structure was based on his own level of skill in 1995, which "is much higher and much more informed...than that of a person of ordinary skill in the art in 1988-89." Thus, giving full credence to this declaration despite its untimeliness, one must conclude that the functional effects of the "thereby" clause are now understood by him to be inherent in the Kuo structure. The only apparent remaining area of disagreement between

respondents' expert Dr. Caywood and complainants' expert Mr. Greene on this point is whether one of ordinary skill in the art would have recognized this inherency in 1988-89. However, complainants' experts have admitted that those skilled in the art in 1988-89 knew that asperities increased capacitance and that a multi-layer oxide-nitrate-oxide dielectric reduces charge transport capability. (Green Dep. Tr. 680, Oldham Dep. Tr. 209-210, 261, 325-326; OKI Surreply Exs. A and B).<sup>3</sup>

The questions quoted above did not include the phrase "in all modes" and thus Mr. Greene's admission does not explicitly extend to that language. Other admissions of complainants' witnesses show that there is no genuine issue of material fact with respect to this phrase. Elsewhere in Mr. Greene's deposition, he testified that reducing the charge transport capability would affect the function of the device in all modes:

So I would say probably if you want to generalize, yes, it will give you reduced charge transport in all modes, some being to the detriment of the design, some being to the enhancement of the design, but it will certainly give you reduced charge transport.

Greene Depo. Tr. 779, Ex. 2 to Samsung response.

Also, as previously stated, the prosecution history of the parent of the '904 patent includes Mr. Hazani's statement that reduced charge transport capability is "accomplished mainly by the addition of the nitride layer" in the dielectric. On the following page, Mr. Hazani states that the inclusion of a nitride layer in the dielectric "increases the capacitance per unit area." Ex. 4 to Samsung response, pp. 9-10. There is no support for the proposition that these effects occur in one mode of operation and not in another.

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<sup>3</sup> See further discussion in section "E" below, showing that the relevant time period is not the 1988-1989 period, but the present.

**C. Order 59 Erroneously Accepted the Staff's Misstatement of the Law Regarding the Relevance of a Patent's "Teaching" in Determining Whether it Anticipates a Later Patent**

Complainants assert that Order 59 erroneously relies on In re Self, 671 F.2d 1344 (CCPA 1982) and fails to follow Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 20 USPQ2d 1746 (Fed Cir. 1991).

Complainants cite the following portion of Continental Can:

If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.

948 F.2d at 1268-69, 20 USPQ2d at 1749 (emphasis added). As suggested by the Staff, complainants seem to be arguing that "as taught" requires an explicit teaching, which would effectively eliminate the very concept of inherency affirmed in Continental Can. Order No. 59 explicitly relies on the holding of Continental Can, as restated by the Federal Circuit in Glaxo Inc. v. Novopharm Ltd., 52 F.2d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995): "the disclosure need not be express, but may anticipate by inherency where it would be appreciated by one of ordinary skill in the art." The language cited by complainants must be interpreted to mean that an explicit teaching is sufficient but not necessary to find anticipation. If inherent anticipation is found under the standards of Glaxo and Continental Can, pointing to language that appears to "teach away" from the claim in issue does not avoid invalidity.

**D. Kuo Does Not Contain a Description of the Asperities or How They Are Produced Sufficient to Enable One Skilled in the Art to Make the Kuo Device or the Hazani '904 Device**

This argument is raised for the first time in the motion to reconsider, and as such is untimely.

Kuo states at col. 4, lines 41-46:

Asperities, or roughness, of the polysilicon-dielectric interfaces are relied upon to decrease the erase voltage required to reasonable levels. The conditions under which both the polysilicon and the inter-layer dielectric are

formed influence, according to know[n] principles, the roughness of the interface.

The Faraone '360 patent (Ex. F to OKI response) was known in the art as teaching how to produce asperities in the 1988 time frame; Hazani used the same process. (Greene Depo. Tr. at 833, Ex. D to OKI response.)

No genuine issue of material fact is raised with respect to enablement of Kuo.

**E. The Record is Devoid of Evidence of How One Skilled in the Art Would Have Interpreted Kuo at the Time of the Hazani Invention**

This argument is raised for the first time in the motion to reconsider and thus is untimely.

Complainants assert that the inherency issue must be determined at that point in time that the later invention was conceived (i.e., 1988). The only case cited for this proposition is inapposite because it deals with obviousness under § 103, not anticipation under § 102. In re Raynes, 7 F.2d 1037, 28 USPQ2d 1630 (Fed. Cir. 1993). Section 103 expressly refers to obviousness "at the time the invention was made," whereas § 102 contains no such time limitation. No error in Order No. 59 is shown by the Raynes decision.

Continental Can requires that the inherency "would be"<sup>4</sup> recognized by one of ordinary skill, not "would have been"—the language of obviousness used in Raynes, referring to the past, when the invention was made. Recognition of the inherency "accommodates situations where the common knowledge of technologists is not recorded in the reference; that is, where technological facts are known to those in the field of the invention, albeit not known to judges." Continental Can, 20 USPQ2d at 1749-1750. This language suggests that extrinsic evidence of inherency is an aid to the judge in determining what the prior art discloses in the present.<sup>5</sup>

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<sup>4</sup> The conditional present tense of the verb "to be."

<sup>5</sup> Similarly, in determining whether there is equivalence and whether changes from claim language are substantial or insubstantial under the doctrine of equivalents, the judge is instructed to assess knowledge in the art in the present. Atlas Powder Co. v. E.I. duPont de Nemours & Co., 750

In any event, complainants' experts have admitted that those skilled in the art in 1988-89 knew that asperities increased capacitance and that a multi-layer oxide-nitride-oxide dielectric reduced charge transport capability. (Greene Depo. Tr. 680, Oldham Depo Tr. 209-210, 261, 325-326; OKI surreply exs. A and B.)

**F. Since Kuo Was Not Cited by the Examiner as Prior Art, the Finding of Invalidity Overrules the Patent Office's Finding that the '904 was not Anticipated by Prior Art Closer than Kuo**

This argument, too, was not previously made and is untimely.

Complainants concede that PTO actions are not binding on the Commission. There is no showing that Order No. 59 failed to accord the proper presumption of validity or used an incorrect standard for finding invalidity.

**G. There is No Evidence in the Record to Support a Finding of Anticipation of the "Substantially Conformal" Limitation of Claim 15**

Complainants, in their motion for reconsideration contend in effect that the second plate of the capacitor should substantially conform to the first capacitor plate. As pointed out by the Staff, this theory is raised here for the first time and is different from the claim construction asserted previously by complainants, including in their prehearing statement.

Dr. Caywood's declaration in support of NEC's motion states in paragraph 8 that "each and every element" of claim 15 is expressly disclosed or is inherent in Kuo. Mr. Greene's deposition testimony is in accord as to the structure. (Tr. 841-842.)

As pointed out by NEC, this new construction of complainants is contrary to the express language of claim 15, which requires the second plate of the capacitor to be conformal to the second surface of the dielectric, not to the first plate. There is no basis to permit such a construction to be advanced at this late date.

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F.2d 1569, 1581 (Fed. Cir. 1984).

### **III. The Texas Instruments Case Supports A Finding Of Invalidity**

There is no genuine issue of material fact as to the disclosure in the Kuo patent of each of the structural elements preceding the "thereby" clause in the claims at issue.

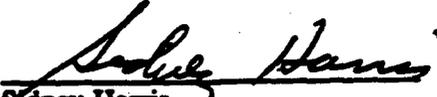
In its response to NEC's motion for summary determination, the Staff argued that the "thereby" clause expresses only the results of the preceding structural language, and that it is analogous to the "whereby clause" found to add nothing to the patentability or substance of the claim in Texas Instruments v. U.S. International Trade Commission, 26 USPQ2d 1018, 1023-24 (Fed. Cir. 1993). A ruling on this point was deferred in Order No. 59 (at fn. 2).

As discussed above, it is now clear that Mr. Greene finds the functional results of the "thereby" clause [increased capacitance and reduced charge transport capability] to be inherent in the operation of the Kuo structure, and that these functional results occur "in all modes" of operation. Accordingly, there is no genuine issue of material fact with respect to the finding that the "thereby" clause adds no limitations not inherent in the structural elements of the claims, and adds nothing to the patentability of the claim.

### **IV. Conclusion**

There being no showing of manifest error in Order No. 59, Motion No. 371-125 is denied. The grant of the summary determination motions in Order No. 59 (which Order is incorporated herein) is reiterated herein, namely that: Respondents are entitled to a ruling as a matter of law that Claims 1, 2, 4-13, 15-17, and 22-25 of the '904 patent are anticipated under 35 U.S.C. §102 and are

therefore invalid, there being no dispute as to any material fact necessary to this summary determination. Order No. 59 and this order are hereby certified to the Commission as an initial determination.<sup>6</sup>

  
Sidney Harris  
Administrative Law Judge

Issued: October 13, 1995.

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<sup>6</sup> Pursuant to 19 C.F.R. § 210.42(h), this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.43, or the Commission, pursuant to § 210.44 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.43, 201.14, and 201.16(d).



PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION  
Washington, D.C.

In the Matter of )  
 )  
CERTAIN MEMORY DEVICES WITH ) Investigation No. 337-TA-371  
INCREASED CAPACITANCE AND )  
PRODUCTS CONTAINING SAME )

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95  
SEP 14  
P2:44

Order No. 59: Granting Motion for Partial Summary Determination

On August 18, 1995, respondents NEC Corporation and NEC Electronics Inc. filed a motion for summary determination that claims 1, 2, 4-13, 15-17, and 22-25 of U.S. Patent No. 5,166,904 are anticipated by the prior art and are invalid. The remaining respondents filed joinders to the motion, adding claims 18-20 and 26-28 to the list of claims at issue in this motion. (The notice of investigation includes claim 21 in the scope of the investigation, but complainants do not now allege that any respondent infringes claim 21.)

Complainants Emanuel Hazani and Patent Enforcement Fund, Inc., oppose the motion. The Commission investigative staff supports the motion.

Respondents NEC, OKI and Mitsubishi argue that three prior art references anticipate independent claims 1, 15, and 22, and dependent claims 2, 4-13, 16-17 and 23-25 of the Hazani '904 patent in issue. Respondent Samsung argues that two of the same references also anticipate claims 18-20 and 26-28, the claims Samsung is accused of infringing.

Among the three prior art references, U.S. Patent No. 4,758,986 (the Kuo patent) is asserted by the various respondents to anticipate the claims in issue. This order is limited to a consideration of the Kuo patent. The application for the Kuo patent was filed on February 20, 1987, long before the earliest conception date asserted by complainants for the Hazani '904 patent, and there is no dispute that the Kuo patent constitutes prior art under 35

U.S.C. § 102(e).

The respondents have demonstrated that there exists no genuine issue of material fact that claims 1, 2, 4-13, 15-17, and 22-25 are anticipated by the Kuo patent and that partial summary determination is appropriate.

Commission final rule 210.18(b) provides that a summary determination shall be rendered if pleadings and any depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a summary determination as a matter of law.

19 C.F.R. 210.18(b). In deciding a motion for summary determination, the judge must view all evidence in the light most favorable to the nonmoving party, and all reasonable inferences must be drawn in favor of the party opposing the motion. Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1560 (Fed. Cir. 1988). Any doubt as to the existence of a genuine issue of material fact must be resolved in favor of the nonmoving party. Finish Engineering Co. v. Zerpa Indus., 806 F.2d 1041, 1043 (Fed. Cir. 1986).

A patent claim is anticipated and therefore invalid if a single prior art reference discloses each and every limitation of the claim. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995).

"The disclosure need not be express, but may anticipate by inherency where it would be appreciated by one of ordinary skill in the art." Id., citing Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). That a claim limitation is inherently disclosed by the prior art reference may be shown by extrinsic evidence. Id.

NEC submitted the declaration of its expert, Dr. Caywood, in support of the motion. In his declaration (Motion Ex. 2, ¶ 8), Dr. Caywood asserts that each element of at least claims 1-13, 15-17 and 22-25 of the Hazani patent in issue is expressly disclosed or inherent in the Kuo patent, and that the inherency would be recognized by one of ordinary skill in the art. The Caywood declaration includes a claim chart which is attached hereto for

reference.

Respondents also submitted excerpts from the deposition of complainants' expert, Dr. Greene, in support of the motion. As most clearly set out in OKI's joinder and "joinder in reply" papers, Dr. Greene admitted that each structural element of claims 1, 2, 4-14, 15-17, and 23-25 was disclosed in the Kuo patent.<sup>1</sup> Dr. Greene stated that the two functional effects in the "thereby" clause of the independent claims were not expressly disclosed, but admitted that the Kuo structure would inherently result in those effects (increased capacitance and reduced charge transport capability). OKI reply joinder memorandum, Ex. A, Greene depo. Tr. 701-702.

Dr. Greene did not express an opinion regarding whether claim 22 was disclosed in the Kuo patent. OKI points out that he did admit that "was texturized" in claim 22 means the same thing as "was textured" in claim 1, and that the first and second insulator limitations and second plate limitation of claims 1 and 22 have the same scope. *Id.*, Tr. 787-790. OKI argues that these admissions show that claim 22 is anticipated, because claim 1 is admittedly anticipated. It is not necessary to decide whether Dr. Greene's admissions, standing alone, would be enough to find that claim 22 is anticipated by Kuo. Dr. Caywood's declaration is explicit on this point, and Dr. Greene's testimony has not been shown to be inconsistent with the declaration.

Complainants, in their response to the motion, argue that the "thereby" functional elements are not explicitly disclosed in Kuo. Complainants also rely on a statement by Dr. Greene that the Kuo patent, in its disclosure of "decreas[ing] the erase voltages required to reasonable levels" (col. 4, lines 42-43) teaches *increasing* charge transport rather than *reducing* charge

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<sup>1</sup> Although claim 14 is asserted against NEC, Mitsubishi, and OKI, none of the respondents sought a summary determination as to this claim, despite Dr. Greene's admission that it is disclosed in Kuo. NEC specifically excluded claim 14 from consideration in its motion, and Dr. Caywood did not refer to it in his declaration. OKI, while referring to Dr. Greene's admission in the text of its reply joinder, did not include claim 14 in the title or the prayer for relief.

transport as found in the "thereby" clause of the patent claims in issue. (Greene depo. Tr. 699.) Neither of these arguments is sufficient to raise a genuine issue of material fact.

As stated above, the law does not require the explicit disclosure of every claim element in an anticipating reference. Such elements may be inherent in the structure of the anticipatory reference. As pointed out by the Commission staff, what a prior art reference "teaches" is not germane to a finding of anticipation under §102 of the Patent Act. See In re Self, 671 F.2d 1344, 1350-51 (CCPA 1982).<sup>2</sup> What matters is that Kuo discloses, either explicitly or inherently, all elements of claims 1, 2, 4-13, 15-17, and 22-25 of the '904 patent. Dr. Caywood's declaration stands unrebutted except for complainants' legal arguments that are hereby rejected. Dr. Caywood's declaration is buttressed by the admissions of complainants' expert, Dr. Greene.

Samsung's joinder in the motion, filed September 7, brings claims 18-20 and 26-28 into consideration. (None of the other respondents is accused of infringing these claims, which cover a "chemically engraved" surface rather than a "textured" surface.) Samsung relies on Dr. Caywood's July 25 expert report in addition to the NEC motion, but the expert report is not in affidavit form, and the motion does not address the claims at issue with respect to Samsung. Samsung argues that the term "chemically engraved" is not patentably distinct from "textured", but in Order No. 58, it was found that there remain issues of fact relating to construction of the term "chemically

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<sup>2</sup> The staff also refers to Texas Instruments v. United States International Trade Comm'n, 26 USPQ2d 1018, 1024 (Fed. Cir. 1993), in which the court held that "[a] 'whereby' clause that merely states the result of the limitations of the claim adds nothing to the patentability or substance of the claim." The staff suggests that the "thereby" clause at issue here is analogous to the "whereby" clause in Texas Instruments and appears to express only the results of the preceding claim language. The staff does not identify any testimony on this point, however, and no finding will be made on this point at present.

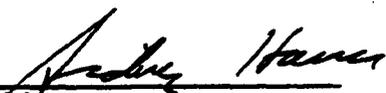
engraved." For these reasons, and because of the lateness of filing of the joinder, Samsung's request as to claims 18-20 and 26-28 is denied.

Therefore, there is no dispute as to any material fact that: (1) what is claimed in claims 1, 2, 4-13, 15-17, and 22-25 of the '904 patent is disclosed in the Kuo patent, and (2) the Kuo patent is prior art under § 102 which anticipates the above listed claims of the '904 patent.

Remaining for trial are the issues of validity and infringement of claims 14, 18-20, and 26-28 of the '904 patent.

Claims 1, 2, 4-13, 15-17, and 22-25 of the '904 patent are anticipated under 35 U.S.C. § 102 and are therefore invalid. Motion No. 371-108 is therefore granted.

Motions 371-116, 371-117, 371-118 (motions for leave to file a joinder or a reply) also are granted.

  
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Sidney Harry's  
Administrative Law Judge

Issued: September 12, 1995

