UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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TRW AUTOMOTIVE US LLC,
Petitioner,

v.

MAGNA ELECTRONICS INC.,
Patent Owner.

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Case IPR2014-00262
Patent 7,655,894 B2

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Before JUSTIN T. ARBES, BENJAMIN D. M. WOOD, and
NEIL T. POWELL, *Administrative Patent Judges*.

WOOD, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I.     INTRODUCTION

### A.     *Background*

TRW Automotive US LLC ("TRW") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1–5, 9, 10, 12–21, and 24–28 of U.S. Patent No. 7,655,894 B2 (Ex. 1002, "the '894 patent").  Magna Electronics Inc. ("Magna") filed a Preliminary Response.  Paper 7.  We instituted an *inter partes* review of claims 1–3, 5, 10, 13–16, 25, 26, and 28 based on the following proposed grounds of unpatentability:

| Reference[s] | Basis | Claims Challenged |
|---|---|---|
| Yanagawa,[1] Vellacott,[2] and Koshizawa[3] | § 103(a) | 1–3, 5, and 10 |
| Yanagawa, Vellacott, Koshizawa, and Bottesch[4] | § 103(a) | 16 |
| Yanagawa, Vellacott, Koshizawa, and Aurora[5] | § 103(a) | 13 and 14 |
| Yanagawa, Vellacott, Koshizawa, and Kawahara[6] | § 103(a) | 15, 25, 26, and 28 |

After the Board instituted trial, Magna filed a Patent Owner Response (Paper 23, "PO Resp."), to which TRW replied (Paper 27, "Pet. Reply").

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[1] JP S62-131837 to Yanagawa (June 15, 1987) (Ex. 1005).

[2] Oliver Vellacott, *CMOS in Camera*, IEE REVIEW (May 1994) (Ex. 1007).

[3] US 5,177,606 to Koshizawa (Jan. 5, 1993) (Ex. 1008).

[4] US 5,166,681 to Bottesch et al. (Nov. 24, 1992) (Ex. 1010).

[5] Mai Chen, *AURORA: A Vision-Based Roadway Departure Warning System*, 1995 IEEE/RSJ INT'L CONG. ON INTELLIGENT ROBOTS AND SYS. (Aug. 9, 1995) (Ex. 1012).

[6] US 4,758,883 to Kawahara (Jul. 19, 1988) (Ex. 1013).

Oral Hearing was held on February 19, 2015, and the Hearing Transcript (Paper 36, "Tr.") has been entered in the record.

We have jurisdiction under 35 U.S.C. § 6(c). This Final Decision is entered pursuant to 35 U.S.C. § 318(a). We determine that TRW has not shown by a preponderance of the evidence that the challenged claims are unpatentable.

### B. Related Proceedings

TRW discloses that the '894 patent has been asserted in *Magna Electronics, Inc. v. TRW Automotive Holdings Corp.*, Case No. 1:12-cv-00654-PLM (W.D. Mich. 2012). Pet. 6.

### C. The '894 Patent (Ex. 1002)

The '894 patent, titled "Vehicular Image Sensing System," describes a system for controlling a vehicle—e.g., dimming the vehicle's headlights—in response to detecting "objects of interest" in front of the vehicle—e.g., the headlights of oncoming vehicles and the taillights of leading vehicles. Ex. 1002, 1:19–24. The system uses an image sensor that divides the scene in front of the vehicle into "a plurality of spatially separated sensing regions." *Id.* at 2:9–12. A control circuit with a processor receives image data from the image sensor and determines if individual regions include light sources having a particular characteristic, such as a "spectral characteristic" (color), or intensity. *Id.* at 1:60–66, 5:48–56. By comparing the lights' characteristics with the "distribution" of the lights across the spatially separated sensing regions, such as the lights' proximity to each other and to the vehicle's central axis, the system can distinguish oncoming headlights and leading taillights from streetlights and other lights that are not of interest to the system. *Id.* at 2:38–49.

### D.    *Illustrative Claims*

Of the claims at issue in this proceeding, claims 1 and 25 are independent, and each is drawn to an image sensing system for a vehicle. Ex. 1002, 12:18–15:37.  Claims 2, 3, 5, 10, and 13–16 depend directly or indirectly from claim 1, and claims 26 and 28 depend directly or indirectly from claim 25.  *Id.* at12:18–16:9.

The independent claims share at least three common limitations: (1) an imaging sensor comprising a two-dimensional array of light-sensing photosensor elements; (2) the imaging sensor being inside the vehicle on which it is mounted, having a forward field of view through the vehicle's windshield; and (3) a logic and control circuit comprising a processor that processes the image data to identify objects of interest.  Ex. 1002, 12:18–32, 13:55–67, 14: 31–42, 15:11–24.  Independent claim 1 is illustrative and is reproduced below:

> 1. An image sensing system for a vehicle, said image sensing system comprising:
>
> an imaging sensor comprising a two-dimensional array of light sensing photosensor elements formed on a semiconductor substrate;
>
> wherein said imaging sensor is disposed at an interior portion of the vehicle proximate the windshield of the vehicle and wherein said interior portion is at or proximate to an interior rearview mirror assembly of the vehicle and wherein said imaging sensor has a forward field of view to the exterior of the vehicle through the windshield;
>
> a logic and control circuit comprising an image processor for processing image data derived from said imaging sensor;
>
> wherein said image sensing system identifies objects of interest by processing said image data to identify objects of interest based at least on spectral differentiation; and

wherein identification of objects of interest is enhanced by comparing over successive frames image data associated with objects in said forward field of view of said image sensor.

## II.   ANALYSIS

### A.   *Claim Construction*

"A claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *see In re Cuozzo Speed Tech., LLC*, 778 F.3d 1271, 1281 (Fed. Cir. 2015) ("We conclude that Congress implicitly adopted the broadest reasonable interpretation standard in enacting the AIA."). Under that standard, the claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we generally give claim terms their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.") (internal quotation marks omitted).

We construe the following term in claim 1: "wherein identification of objects of interest is enhanced by comparing over successive frames image data associated with objects in said forward field of view of said image sensor" ("the *enhanced* limitation"). No other terms require express construction for purposes of this decision.

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