

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE TECHNOLOGIES, LLC
Petitioner,

v.

COMMUNICATIONS COMPONENTS ANTENNA INC.,
Patent Owner.

Case IPR2016-00999
Patent 8,311,582 B2

Before JEFFREY S. SMITH, TRENTON A. WARD, and PETER P. CHEN,
Administrative Patent Judges.

SMITH, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Commscope Technologies, LLC, filed a Petition for *inter partes* review of claims 1–28 of U.S. Patent No. 8,311,582 B2 (Ex. 1001, “the ’582 patent”). Paper 1 (“Pet.”). Patent Owner, Communications Components Antenna Inc., filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.108.

Upon consideration of the Petition and the Preliminary Response, we are not persuaded Petitioner has demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability of claims 1–28 of the ’582 patent. Accordingly, we do not institute an *inter partes* review.

A. Related Matters

Neither party identifies any other matter related to the ’582 patent.

B. The ’582 Patent

The ’582 patent is titled “Asymmetrical beams for spectrum efficiency,” and relates generally to improving sector capacity and throughput in an established network without creating coverage holes. Ex. 1001, 1:6–8. A sector antenna of a base station for a cellular network is replaced with a sub-sector antenna that generates a plurality of sub-sector coverage areas that collectively substantially cover the coverage area of the replaced sector antenna. *Id.* at Abstract. Figure 2 of the ’582 patent is reproduced below.

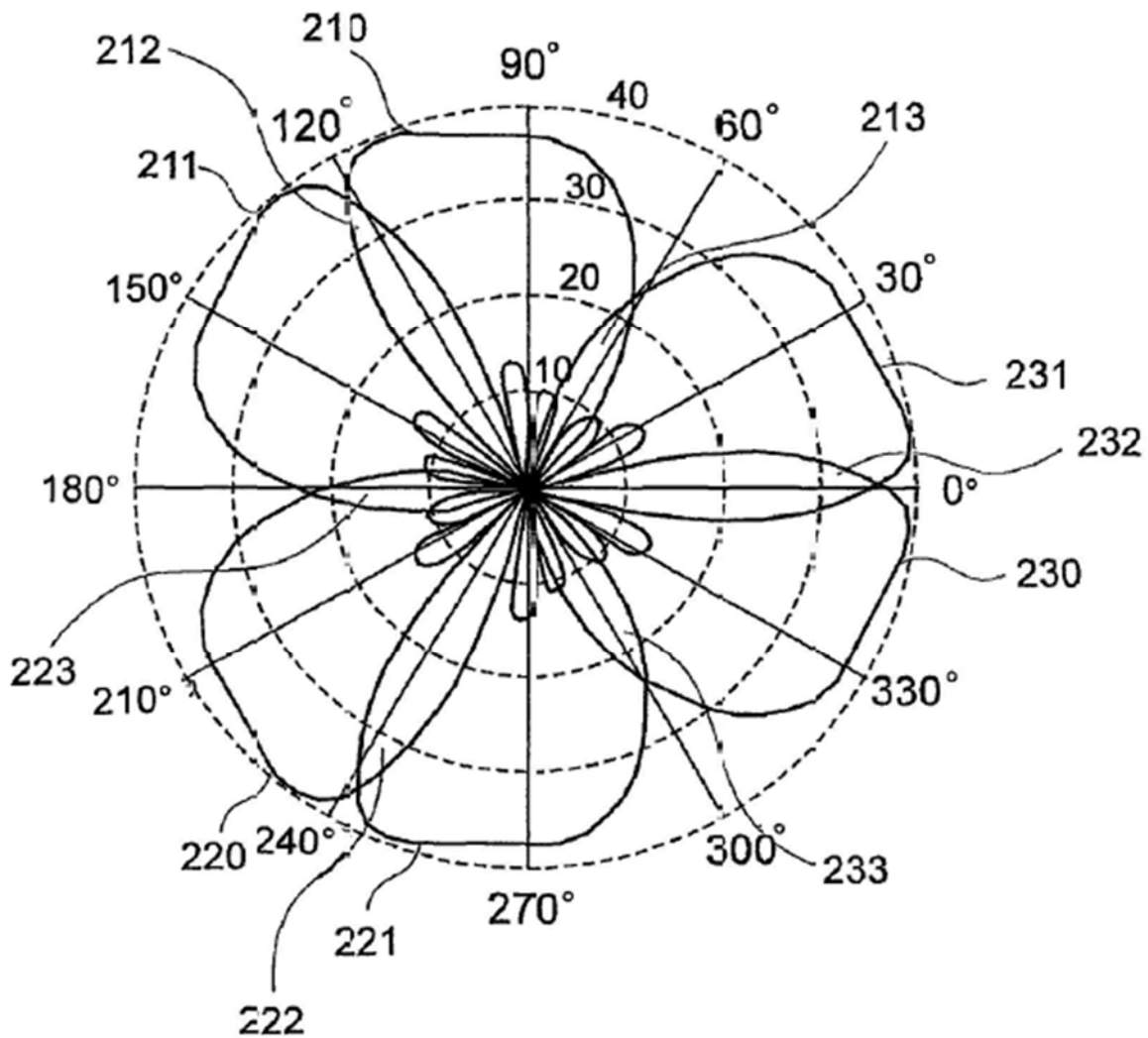


Figure 2

Figure 2 above shows three mirror-image pairs (210, 211), (220, 221), (230, 231) of asymmetrical sub-sector beams to replace a traditional three sector configuration with a six sub-sector configuration. *Id.* at 5:10–14. The use of asymmetrical beams ensures handover region reduction by means of low overlap 212 of adjacent pairs of sub-sector beams 210, 211 and low overlap 223 between sub-sector beam 211 of a first pair and sub-sector beam

220 of a second pair. *Id.* at 5:14–19. Figure 3 of the '582 patent is reproduced below.

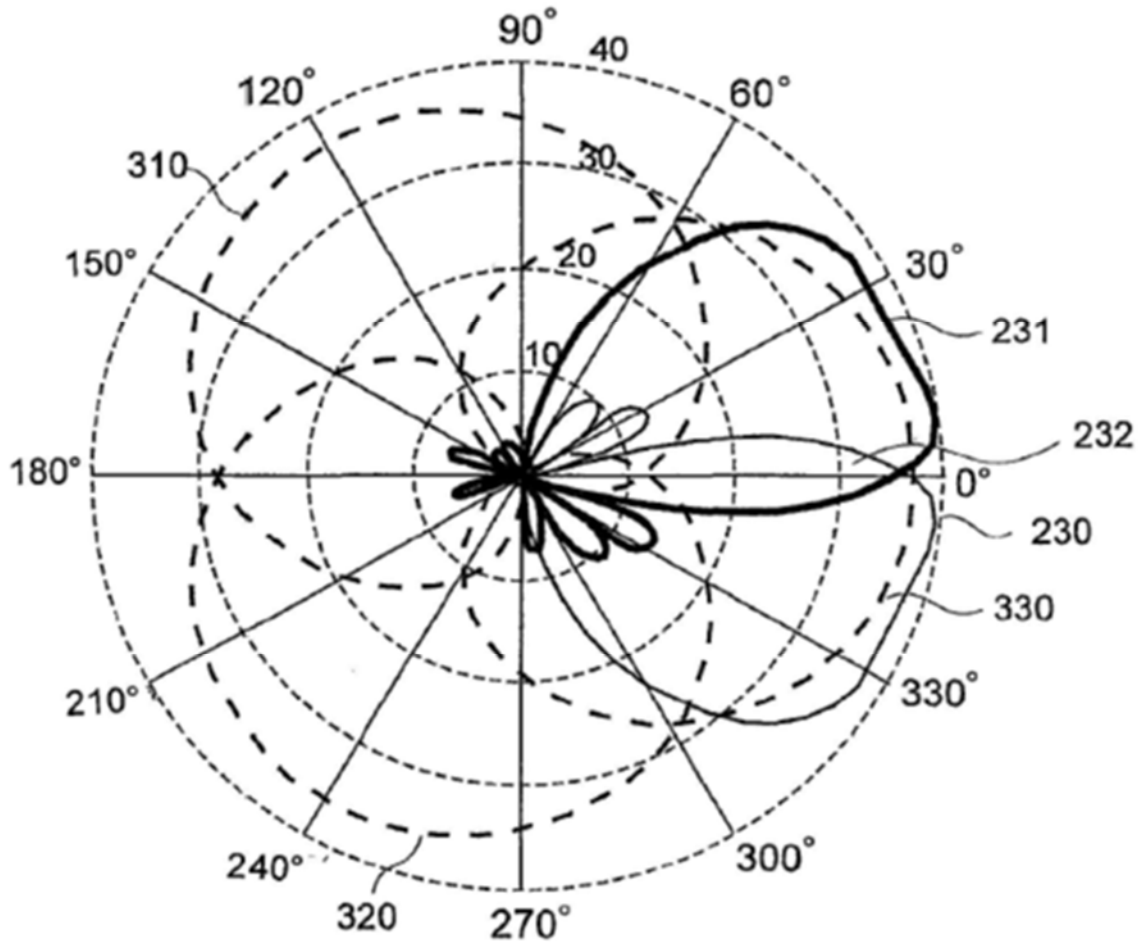


Figure 3

Figure 3 above shows sub-sector beams 230, 231, overlaying conventional full sector beam patterns 310, 320, 330 shown in dashed outline. Ex. 1001, 5:27–30. The beam patterns of the new antenna

corresponding to a sector to sub-sector upgrade have largely the same overall beam pattern as the antenna being replaced. *Id.* at 5:64–67.

According to the '582 patent, the use of the sub-sector antenna permits the selective replacement of a single sector antenna rather than replacement of all sector antennas in a region, leading to lower transitional costs. *Id.* at Abstract.

C. Illustrative Claim

Claims 1, 13, and 20 of the '582 patent are independent. Claim 1 is illustrative of the claimed subject matter:

1. A method for increasing subscriber capacity in a sectorized cellular communications network having a plurality of subscribers and a base station supporting at least one sector, each of the at least one sector having one or more associated sector antennae at the base station having a critical coverage area extending therefrom and overlapping neighbouring sectors thereof in a sector handover zone, the method comprising a step of:

replacing the associated one or more sector antennae for a given sector with a split-sector antenna having a plurality of sub-sector coverage areas extending therefrom, at least one of which is asymmetrical, each corresponding to a sub-sector and overlapping a neighbouring sub-sector coverage area in a sub-sector handover zone, whereby a total critical coverage area provided by the plurality of sub-sector coverage areas is substantially equivalent to a critical coverage area of the replaced one or more associated sector antennae, wherein said at least one asymmetrical sub-sector coverage area reduces overlap with said neighbouring sub-sector coverage area comparing to overlap of the replaced antennae while maintaining the critical coverage area of the replaced antenna.

Ex. 1001, 10:3–23.

D. Asserted Grounds of Unpatentability

Petitioner contends that claims 1–28 of the '582 patent are unpatentable based on the following specific grounds:

Reference(s)	Basis	Challenged Claim(s)
Yea ¹	§ 102(b)	1, 2, 6, 7, 9, 11–15, 18–22, 24, and 27
Yea, Metawave Website ² , Litva ³ , and Wästberg ⁴	§ 103	1, 2, 6, 7, 9, 11–15, 18–22, 24, and 27
Yea and Mouly ⁵	§ 103	3–5
Yea and Smith ⁶	§ 103	8, 16, and 23
Yea and CSA Antennas ⁷	§ 103	10
Yea and Wastberg	§ 103	17 and 25
Yea and Derneryd ⁸	§ 103	26 and 27
Yea and Metawave Website	§ 103	28

¹ Ji-Hae Yea, *Smart Antennas for Multiple Sectorization in CDMA Cell Sites*, RF Design, April 2001 (Pet. 24), (Ex. 1016, “Yea”).

² From Internet Archive Affidavit of Christopher Butler (Ex. 1015).

³ J. Litva et al., *Digital Beamforming in Wireless Communications* (Artech House Publishers 1996) (Ex. 1009, “Litva”).

⁴ U.S. Patent No. 6,608,591 B2, filed Nov. 14, 2001, issued Aug. 19, 2003 (Ex. 1018).

⁵ M. Mouly et al., *The GSM System for Mobile Communications* (Cell & Sys 1992) (Ex. 1004, “Mouly”).

⁶ U.S. Patent No. 6,104,935, filed May 5, 1997, issued Aug. 15, 2000 (Ex. 1019, “Smith”).

⁷ From Internet Archive Affidavit of Christopher Butler (Ex. 1015).

⁸ A. Derneryd et al., *Adaptive Base-Station Antenna Arrays*, Ericsson Review No. 3, 1999 (Ex. 1021, “Derneryd”).

Pet. 24–25.

II. DISCUSSION

A. *Claim Construction*

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard as the claim interpretation standard to be applied in *inter partes* reviews). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner proposes the scope of “a plurality of sub-sector coverage areas extending therefrom, at least one of which is asymmetrical” encompasses a plurality of replacement sub-sector beams, at least one of which has an asymmetrical shape, where asymmetry includes deliberate or inherent asymmetry. Pet. 29 (citing Ex. 1001, 4:4–6; 5:27–30; 5:61–6:3).

Patent Owner proposes there is no reason to construe this term any differently from its ordinary meaning. Prelim. Resp. 22. According to Patent Owner, this means that a sub-sector coverage area, rather than a sub-

sector beam, includes asymmetry. *Id.* at 22–23 (citing Ex. 1001, 3:11–12; 3:16–23).

Petitioner’s proposed construction of this limitation is supported by the specification of the ’582 patent. The ’582 patent discloses replacing a single sector coverage area with sub-sector coverage areas, at least one of which is an asymmetrical coverage area. Ex. 1001, 3:16–18. The ’582 patent discloses that the use of asymmetrical coverage areas permits the total coverage area to closely approximate the symmetrical sector coverage area being replaced, without creating excessively large sub-sector handover zones or introducing severe degradation in network performance. *Id.* at 3:18–24. The ’582 patent discloses creating the asymmetrical coverage areas by replacing an existing antenna with an antenna that has substantially the same coverage area, but divides the coverage area into a plurality of separate asymmetrical beams or sub-sectors. *Id.* at 4:32–38. As disclosed by the ’582 patent, the replacement antenna produces a plurality of separate beams, each defining a new sub-sector with only a small overlapping area between them and which together provide substantially identical coverage to the sector supported by the original antenna, to upgrade the single sector to a plurality of sub-sectors without significantly affecting neighboring sites. *Id.* at 4:51–57. The replacement antenna introduces asymmetry into the generated beam pattern. *Id.* at 4:58–60. The introduction of asymmetrical beams by the replacement antenna allows close approximation of the coverage area of the conventional sector antenna being replaced. *Id.* at 5:61–64.

For purposes of this Decision, we adopt Petitioner’s proposed construction of “a plurality of sub-sector coverage areas extending

therefrom, at least one of which is asymmetrical,” as a plurality of replacement sub-sector beams, at least one of which has an asymmetrical shape, where asymmetry includes deliberate or inherent asymmetry as the broadest reasonable construction consistent with the specification.

We further determine that none of the other terms, including those proposed by Petitioner, require express construction for purposes of this decision.

B. Asserted Anticipation By Yea: Claims 1, 2, 6, 7, 9, 11–15, 18–22, 24, and 27

Petitioner contends that seventeen of the ’582 claims—independent claims 1, 13, and 20, and dependent claims 2, 6, 7, 9, 11, 12, 14, 15, 18, 19, 21, 22, 24, and 27—are anticipated under 35 U.S.C. § 102(b) by Yea. Pet. 35–53.

1. Yea (Ex. 1016)

Yea provides smart antennas for multiple sectorization in CDMA (code division multiple access) cell sites. Ex. 1016, Title. With a smart antenna system, as few as three antennas can configure a site for three, four, five, or six sectors. *Id.* at 5. According to Yea, the smart antenna six-sector configuration was deployed in a site originally configured in three sectors using conventional antennas. *Id.* Yea discloses that the smart antenna six-sector configuration provided increased site capacity. *Id.* at 9. Figure 4 of Yea is reproduced below.

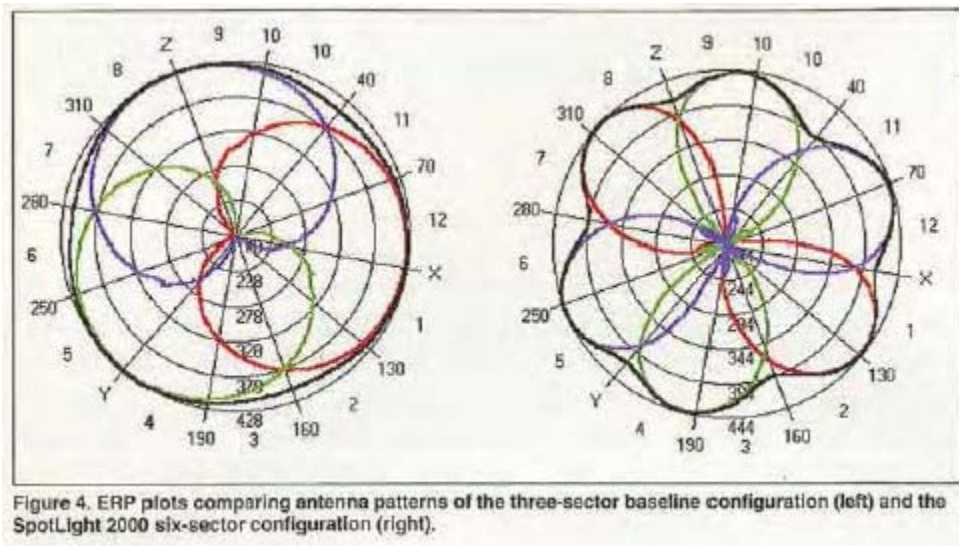


Figure 4 of Yea above shows ERP (effective radiated power) plots of the three-sector (left) and six-sector (right) site configurations. *Id.* at 5. Figure 8 of Yea is reproduced below.

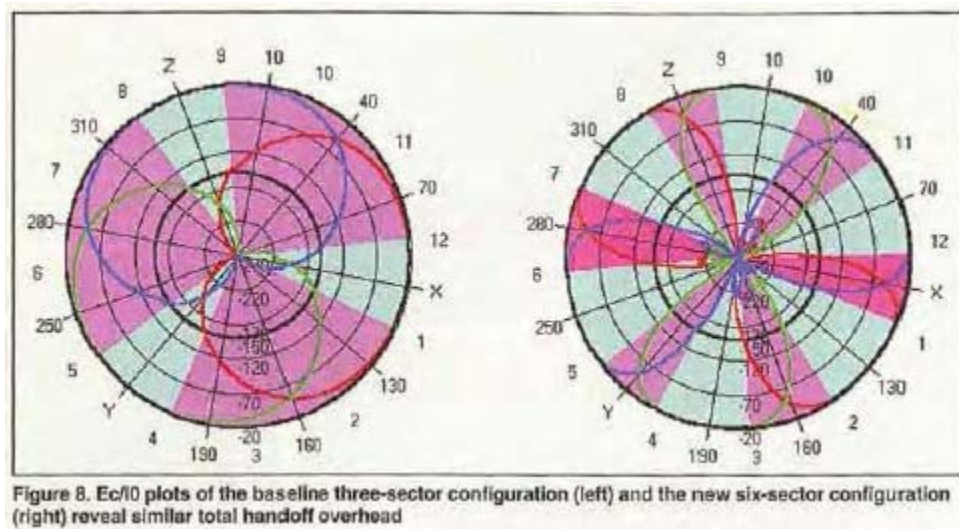


Figure 8 of Yea above compares E_c/I_0 (Energy per chip to Interference power ratio) plots for the three-sector configuration with conventional antennas (left) and the smart antenna six-sector configuration (right). *Id.* at 9. The size of the inter-sector softer handoff regions—and thus the amount of handoff overhead—is indicated by the darker (purple and red) shaded

areas. *Id.* Yea does not expressly use the term “asymmetrical” to describe the coverage areas.

2. Analysis

a. Claims 1, 13, and 20

Claim 1 recites “[a] method for increasing subscriber capacity in a sectorized cellular communications network having a plurality of subscribers and a base station supporting at least one sector.” Ex. 1001, 10:3–5.

Claims 13 and 20 recite similar limitations. *Id.* at 11:4–6, 12:1–3. Petitioner contends Yea describes this limitation in disclosing six-sector deployment of a CDMA smart antenna system, in a site originally configured in three-sector form, to provide increased site capacity. Pet. 35–36 (citing Ex. 1016 at 5, 9; Ex. 1024 ¶ 157).

Claim 1 recites “each of the at least one sector having one or more associated sector antennae at the base station having a critical coverage area extending therefrom and overlapping neighbouring sectors thereof in a sector handover zone.” Ex. 1001, 10:4–9. Claims 13 and 20 recite similar limitations. *Id.* at 11:6–10; 12:3–6. Petitioner contends Yea discloses this limitation in describing a site originally configured in three-sector form using conventional antennas, where the left side of Figures 4 and 8 show the coverage area extending from three sector antennas, including overlapping neighboring sectors in a sector handover zone. Pet. 36 (citing Ex. 1016, 5, Figs. 4 and 8; Ex. 1024 (Declaration of Brian S. Collins) ¶ 158).

Claim 1 recites “replacing the associated one or more sector antennae for a given sector with a split-sector antenna having a plurality of sub-sector coverage areas extending therefrom, at least one of which is asymmetrical, each corresponding to a sub-sector and overlapping a neighbouring sub-

sector coverage area in a sub-sector handover zone.” Ex. 1001 10:10–15. Claims 13 and 20 recite similar limitations. *Id.* at 11:10–16; 12:7–12. Petitioner contends Yea discloses replacing the associated one or more sector antennae for a given sector with a split-sector antenna in describing using multi-beam antennas to facilitate multiple sectorization schemes in a site originally configured in three sectors using conventional antennas. Pet. 36–37 (citing Ex. 1016, 5, 9, 17, Figs. 4 and 8; Ex. 1024 ¶ 159). Petitioner does not contend Yea expressly characterizes the beams as “asymmetric,” but contends the radiation pattern of the six-sector configuration shown in Figures 4 and 8 of Yea shows the beams are asymmetrical and overlap in a neighboring sub-sector in a sub-sector handover zone, as evidenced by a visual review of the figures and by Mr. Collins’ measurements of Yea’s six-sector radiation patterns. Pet. 37 (citing Ex. 1016, Figs. 4 and 8; Ex. 1017). Petitioner also relies on statements made by Patent Owner regarding litigation in India. Pet. 37–38.

Claim 1 recites “whereby a total coverage area provided by the plurality of sub-sector coverage areas is substantially equivalent to a critical coverage area of the replaced one or more associated sector antennae.” Ex. 1001, 10:15–18. Claims 13 and 20 recite similar limitations. *Id.* at 11:16–19, 12:12–15. Petitioner contends this limitation is readily seen in Figures 4 and 8 of Yea, where the right side of each figure has a coverage area substantially equivalent to the critical coverage area of the replaced three-sector antennas shown on the left side. Pet. 38 (citing Ex. 1016, Figs. 4 and 8; Ex. 1024 ¶ 161). Petitioner also relies on Mr. Collins’ overlay of the six-sector beam pattern on the three-sector beam pattern shown in Figures 4 and 8 of Yea to show the total critical coverage area provided by

the six-sector configuration is substantially equivalent to the critical coverage area provided by the three-sector configuration. *Id.* (citing Ex. 1014; Ex. 1024 ¶¶ 162–66).

Claim 1 recites “wherein said at least one asymmetrical sub-sector coverage area reduces overlap with said neighbouring sub-sector coverage area comparing to overlap of the replaced antenna while maintaining the critical coverage area of the replaced antenna.” Ex. 1001, 10:18–23. Claims 13 and 20 recite similar limitations. *Id.* at 11:20–23, 12:15–19. Petitioner contends Figures 4 and 8 of Yea disclose split-sector antennas have asymmetrical sub-sector coverage areas that reduce overlap with neighboring sub-sector coverage areas compared to overlaps between sectors of the replaced antennas, while the total critical coverage area of the split-sector antennas closely approximates the critical coverage area of the replaced antennas. Pet. 38–39 (citing Ex. 1016, Figs. 4 and 8; Ex. 1014, slides 5 and 10; Ex. 1024 ¶¶ 167–68).

Patent Owner argues that Yea does not disclose “a split-sector antenna having a plurality of sub-sector coverage areas extending therefrom, at least one of which is asymmetrical,” as required by claim 1. Prelim. Resp. 27. According to Patent Owner, the text of the Yea reference does not use the term “asymmetric” or otherwise disclose the asymmetrical nature of the radiation patterns. *Id.* at 29–43. Specifically, Patent Owner argues Yea does not indicate whether the scales shown in the plots of Figures 4 and 8 can be accurately measured, or whether the dimensions represent a constant ratio relative to actual dimensions of the antenna pattern, because Yea was printed for marketing purposes, not for a scientific journal. *Id.* at 29, 31, 41. Patent Owner contends that there is no explanation in the text of Yea to disclose

sufficient underlying parameters that allow a person of ordinary skill in the art to scientifically and reliably recreate the plots to scale. *Id.* at 31–32.

Patent Owner also argues that the plots of Figure 4 only show a 4 dB (decibel) range of radiation extending from the antenna, but the entire range is around 40 dB. *Id.* at 30–31.

According to Patent Owner, another problem with the drawings is that the drawings shown in Figure 4 are on a linear scale, and must be converted to a logarithmic scale to surmise the shape of the coverage area corresponding to the antenna pattern, because radio signals attenuate as an exponential function of a distance from an antenna. *Id.* at 32–36. Patent Owner asserts that plots depicted in a logarithmic scale have a different shape than plots depicted in a linear scale. *Id.* at 39.

Patent Owner also argues that the carrier to interference ratio plot of Figure 8 is not the same as an antenna radiation plot. *Id.* at 40. Patent Owner contends that the carrier to interference ratio is used to show the effect of noise or interference on a radiated signal caused by neighboring cells, and is only loosely related to the antenna radiation beam pattern. *Id.* at 41–42.

A similar issue arose in *Nystrom v. TREX Co.*, 424 F.3d 1126, 1148–49 (Fed. Cir. 2005). There, the district court invalidated claims of the patent in suit on summary judgment based on the measured dimensions of a prior art patent figure. *Id.* at 1148. The Federal Circuit reversed, warning “that arguments based on drawings not explicitly made to scale in issued patents are unavailing.” *Id.* at 1149. Petitioner here does not identify any portion of Yea disclosing that Figures 4 and 8 are drawn accurately enough to determine an asymmetrical nature of the radiation patterns. Petitioner also

fails to cite to any disclosure in Yea that identifies or describes an asymmetrical nature of the radiation patterns. Furthermore, Petitioner also has not explained why the shapes shown in the linear scale drawings of Figure 4 would show similar shapes when converted to a logarithmic scale. Additionally, Petitioner does not explain why the carrier to interference ratio shown in Figure 8 can be used to accurately measure antenna radiation beam patterns. We find Petitioner does not sufficiently establish that the plots shown in Figures 4 and 8 of Yea can be used to determine whether the antenna radiation beam pattern is asymmetrical.

On the record before us, we determine the Petition and supporting evidence does not adequately establish a reasonable likelihood that Petitioner would prevail in showing that Yea anticipates independent claims 1, 13, and 20.

b. Dependent Claims 2, 6, 7, 9, 11, 12, 14, 15, 18, 19, 21, 22, 24, and 27

Petitioner argues that Yea anticipates dependent claims 2, 6, 7, 9, 11, 12, 14, 15, 18, 19, 21, 22, 24, and 27. Pet. 47–53. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing in showing that Yea anticipates dependent claims 2, 6, 7, 9, 11, 12, 14, 15, 18, 19, 21, 22, 24, and 27.

C. Asserted Obviousness Over Yea, Metawave Website, Litva, and Wästberg: Claims 1, 2, 6, 7, 9, 11–15, 18–22, 24, and 27

1. Metawave Website (Ex. 1015)

The Metawave Website discloses the SpotLight 2000 smart antenna system as a non-invasive applique on a base station infrastructure. Ex. 1015

at 33. Three multibeam panel antennas of the SpotLight 2000 system replace conventional antennas on the tower. *Id.* According to the Metawave Website, drawing on phased-array technology, SpotLight 2000 allows the user to craft custom antenna patterns based on 12 narrow beams produced by the three panel antennas. *Id.* The Metawave Website further discloses that in the SpotLight 2000 system, sector synthesis allows adjustment of antenna gain and phase on a 30 degree, per-beam basis, allowing the operator to sculpt the cell's coverage footprint. *Id.* at 16.

2. Litva (Ex. 1009)

Litva discloses analog beamforming, in which energy radiated by an aperture antenna is focused along a specific direction, to receive or transmit a signal in that direction. Ex. 1009 at 4. In an example of beamforming, Litva discloses generating four beams from a four element array known as a Butler beamforming matrix. *Id.* at 6–8. Figure 2.13(a) of Litva is reproduced below.

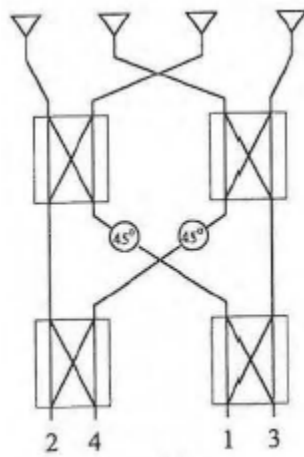


Figure 2.13(a) above shows a 4 x 4 Butler beamforming matrix with four ports numbered 1 through 4. The matrix uses four 90 degree phase-lag

hybrid junctions and two 45 degree fixed-phase shifters. Figure 2.14 of Litva is reproduced below.

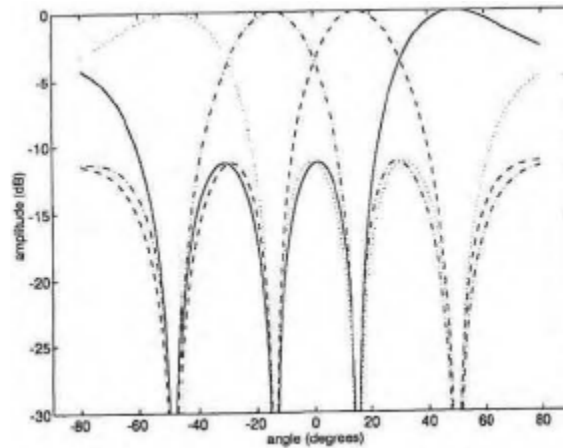
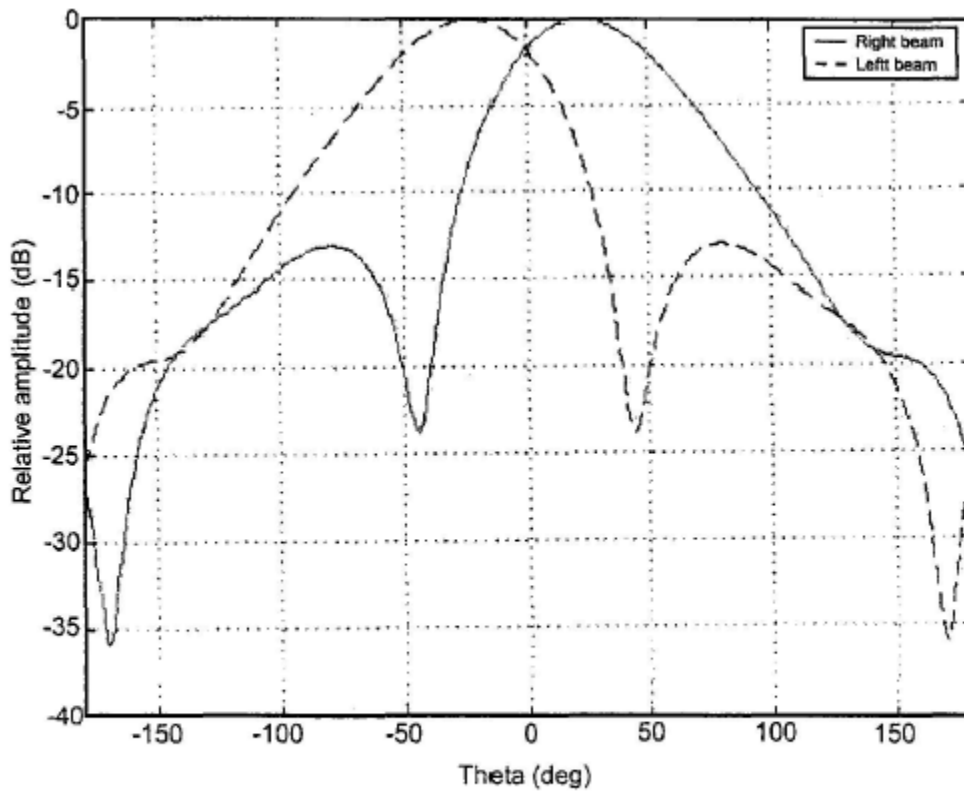


Figure 2.14 of Litva above shows four mutually orthogonal overlapped beams produced by the Butler beamforming matrix. *Id.* at 8.

3. Wästberg (*Ex. 1018*)

Wästberg relates to phased antenna arrays for base stations in communication networks. *Ex. 1018* 1:5–7. An antenna provides an aperture generating a multibeam pattern producing lower side lobe levels for a base station in a communication network compared to the state of the art. *Id.* at 1:55–58. Figure 2 of Wästberg is reproduced below.



PRIOR ART
Fig. 2

Figure 2 above illustrates a prior art simulated azimuth antenna diagram of a dual-beam aperture, consisting of a two-element array with 90 degree phase-gradient. *Id.* at 2:21–23. Figure 18 of Wästberg is reproduced below.

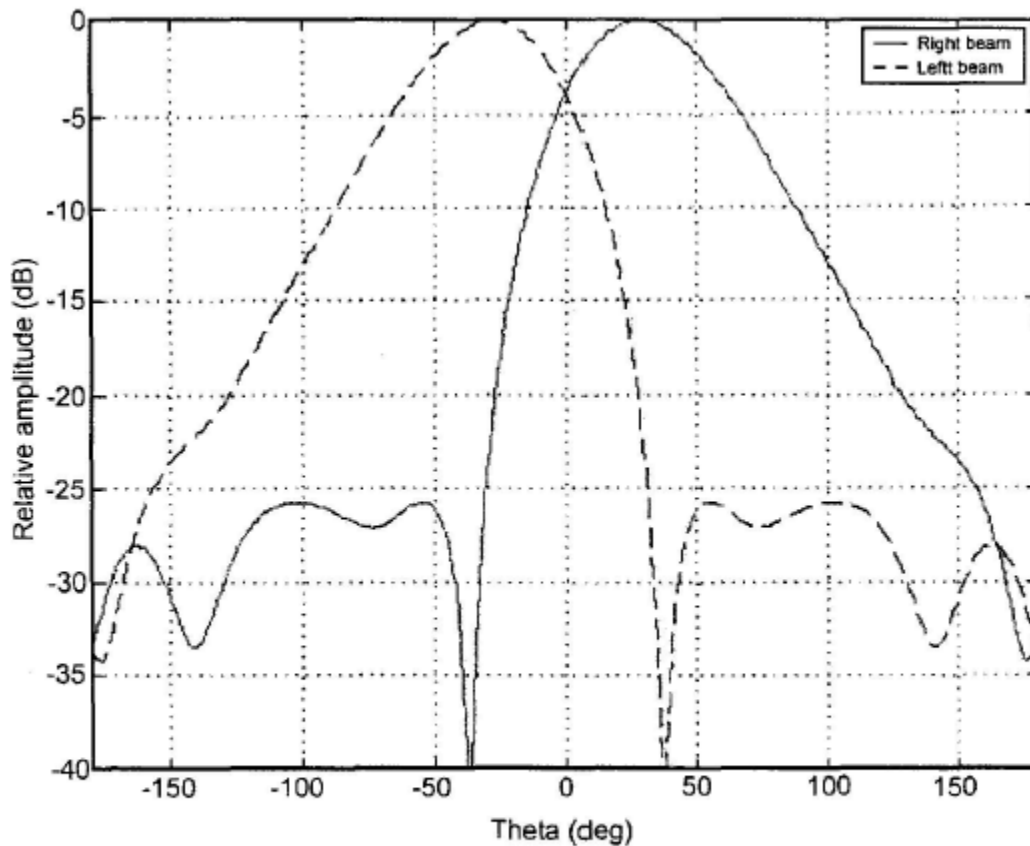


Fig. 18

Figure 18 above illustrates a simulated azimuth antenna diagram for the dual-beam antenna aperture with three radiating elements. *Id.* at 1:62–64. A right beam of Figure 18 has a null coinciding with the maximum of the left beam and vice versa. *Id.* at 6:16–18. The side lobe level at the left and right of the respective right and left lobes is well below –25 dB. *Id.* at 6:18–19. In contrast, Figure 2 shows the first side lobe of the right and left beams has its peak well above –15 dB, and a substantial part of the power will therefore radiate into adjacent cells. *Id.* at 1:47–51.

4. Analysis

Petitioner contends that if Patent Owner argues that asymmetrical beams are not expressly or inherently disclosed in Yea because the word “asymmetric” is not used, the asymmetrical beams would have been obvious in view of Yea and the Metawave Website (Ex. 1015) and/or the Asymmetric Beam Prior Art (Ex. 1009 and Ex. 1018). Pet. 39. Petitioner contends that the Metawave Website discloses this limitation in describing that the split-sector antennas of the SpotLight 2000 system disclosed in Yea were steered planar array antennas. *Id.* (citing Ex. 1015; Ex. 1024 ¶¶ 173–78). According to Petitioner, a person of ordinary skill in the art would have understood that steered beams of a planar array antenna are necessarily asymmetrical. Pet. 39–40 (citing Ex. 1024 ¶¶ 45, 46, 171, 172, 179; Ex. 1009, Fig. 2.14; Ex. 1018, Figs. 2 and 18).

To support this argument, Petitioner relies on the testimony of Mr. Collins, who states that the “Metawave Website expressly discloses that the split-sector antennas used to generate the beam patterns of the SpotLight 2000 system shown in Yea are steered planar arrays.” Ex. 1024 ¶ 174. According to Mr. Collins, a person of ordinary skill in the art would have understood that the antenna radiation patterns of the SpotLight 2000 system disclosed in Yea are asymmetrical beams formed by beam steering of multi-beam planar array antennas because “all prior art steered beam planar array antennas result in asymmetrical beams.” *Id.* at ¶¶ 178–179 (citing Ex. 1009 and Ex. 1018).

Patent Owner contends the asymmetrical characteristics exhibited in the prior art were viewed as a distortion. Prelim. Resp. 47. Patent Owner cites Wästberg’s teaching that asymmetric beams are a drawback. *Id.* at 48

(citing Ex. 1018 5:60–65). Patent Owner also relies on the testimony of its declarant Mark Cosgrove to show that Metawave obtained several patents to remedy what it deemed to be distortion effects due to the asymmetrical beam characteristics, during the same time it was promoting the SpotLight 2000 system. *Id.* at 47–48 (citing Ex. 2001 ¶¶ 150–161). Mr. Cosgrove testifies that Metawave was granted several patents for planar array antennas that express the desirability of symmetric beams, the undesirability of asymmetric beams, and solutions to achieve highly symmetric antenna patterns. Ex. 2001 ¶¶ 150–160.

Specifically, Mr. Cosgrove testifies that U.S. Patent No. 5,929,823 titled “Multiple Beam Planar Array with Parasitic Elements” (Ex. 2010) discloses an antenna to produce a symmetric beam pattern devoid of undesired asymmetry. Ex. 2001 ¶¶ 151–154. Mr. Cosgrove testifies that U.S. Patent No. 6,198,434 titled “Dual Mode Switched Beam Antenna” (Ex. 2011) discloses that a symmetric beam, rather than an asymmetric beam, is suited for providing communications within a sector. *Id.* ¶¶ 155–156. Mr. Cosgrove further testifies that U.S. Patent No. 6,317,100 titled “Planar Antenna Array with Parasitic Elements Providing Multiple Beams of Varying Widths” (Ex. 2012) describes the undesirability of asymmetrical beam patterns, and suggests a solution to achieve a highly symmetric antenna pattern. *Id.* ¶¶ 157–160. Mr. Cosgrove also testifies that U.S. Patent No. 6,583,760 titled “Dual Mode Switched Beam Antenna” (Ex. 2013) discloses a substantially symmetric solution that provides a beam

more suited to providing communications within a defined subsection of an area to be served. *Id.* ¶ 161.

We have reviewed the arguments from Petitioner and Patent Owner, as well as testimony of both Mr. Collins and Mr. Cosgrove. Under Rule 37 C.F.R. § 42.108, any genuine issues of material fact created by the testimonial evidence should be viewed in light most favorable to the petitioner solely for purposes of deciding whether to institute an *inter partes* review. Even reviewing the testimony of Mr. Collins in the light most favorable to Petitioner, we determine Petitioner has established only that asymmetrical beams may be used in a planar array antenna, but not that a person of ordinary skill in the art would have understood steered beams of a planar array antenna are necessarily asymmetrical. Mr. Collins cites to Litva (Ex. 1009) and Wästberg (Ex. 1018) in stating that prior art steered beams of a planar array antenna can be asymmetrical beams. Ex. 1024 ¶ 179.

We credit Patent Owner's arguments and the testimony of Mr. Cosgrove to determine Petitioner does not sufficiently establish the likelihood that a person of ordinary skill in the art would have understood that steered beams of a planar array antenna are necessarily asymmetrical. Further, Petitioner fails to set forth a sufficient rationale for why a person of ordinary skill in the art would use the asymmetrical beams of the prior art with the disclosure of Yea. Pet. 39–40. On the record before us, we determine the Petition and supporting evidence does not adequately establish a reasonable likelihood that using asymmetrical beams in Yea would have been obvious. We therefore conclude that the information presented does not show a reasonable likelihood that Petitioner would prevail in showing

the subject matter of claims 1, 2, 6, 7, 9, 11–15, 18–22, 24, and 27 would have been obvious over Yea, Metawave Website, Litva, and Wästberg.

D. Asserted Obviousness Over Yea and Mouly: Dependent Claims 3–5

1. Mouly (Ex. 1004)

Mouly discloses that in order to communicate with a base station, a mobile station must first become synchronized with the base station. Ex. 1004, 192. A broadcast control channel (BCCH) sends information to a mobile station so the mobile station can select a cell. *Id.* Cell selection information includes cell identity, location area identity, and various parameters impacting the access choice. *Id.* at 425, 427–428.

2. Analysis

Petitioner argues that claims 3–5 are obvious over the combination of Yea and Mouly. Pet. 53–55. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

E. Asserted Obviousness Over Yea and Smith: Dependent Claims 8, 16, and 23

1. Smith (Ex. 1019)

Smith discloses an antenna configuration for forming a plurality of overlapping radiation beams at a base station for use in a cellular radio communications system, and a method of forming a plurality of overlapping radiation beams. Ex. 1019, 1:6–10. Figure 7 of Smith is reproduced below.

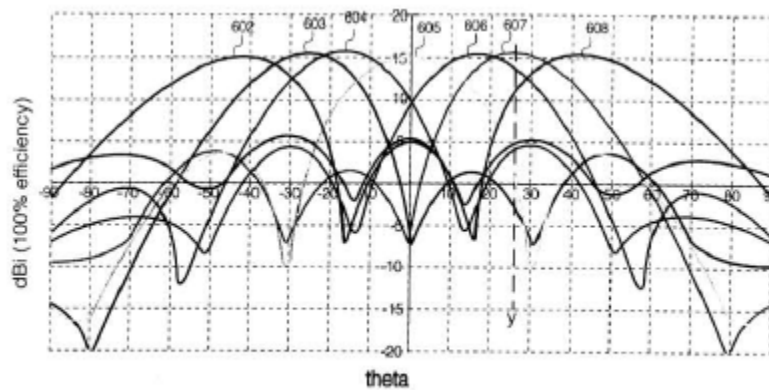


Fig. 7

Figure 7 of Smith above illustrates an azimuth plot of measured radiation beams radiating from an antenna base station and formed by a beam forming apparatus. Ex. 1019, 7:3–8.

2. Analysis

Petitioner argues that claims 8, 16, and 23 are obvious over the combination of Yea and Smith. Pet. 56–58. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

F. Asserted Obviousness Over Yea and CSA Antennas: Dependent Claim 10

1. CSA Antennas (Ex. 1015)

Petitioner contends that CSA Ltd. was a company that made and sold base station antennas for use in sectorized cellular communications networks more than one year before the effective filing date of the '582 patent. Pet. 22 (citing Ex. 1015, 46–57; Ex. 1024 ¶ 148). CSA Antennas discloses base station antennas having half power beamwidths (HPBW) including 65°, 90°, 105°, and 120°. *Id.*

2. Analysis

Petitioner argues that claim 10 is obvious over the combination of Yea and CSA Antennas. Pet. 58–59. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

G. Asserted Obviousness Over Yea and Wästberg: Dependent Claims 17 and 25

Petitioner argues that claims 17 and 25 are obvious over the combination of Yea and Wästberg. Pet. 60–62. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

H. Asserted Obviousness Over Yea and Derneryd: Dependent Claims 26 and 27

1. Derneryd (Ex. 1021)

Derneryd discloses adaptive array antennas used in field trials to increase capacity in mobile communication networks. Ex. 1021, Abstract. Derneryd teaches replacing sector antennas with multibeam array antennas and a Butler matrix. *Id.* at 3–5; Figs. 5, 6.

2. Analysis

Petitioner argues that claims 26 and 27 are obvious over the combination of Yea and Derneryd. Pet. 62–63. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this

limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

I. Asserted Obviousness Over Yea and Metawave Website: Dependent Claim 28

Petitioner argues that claim 28 is obvious over the combination of Yea and Metawave Website. Pet. 59–60. In so arguing, Petitioner relies on Yea as disclosing the claimed asymmetrical coverage area. *Id.* Because we are not persuaded that Yea discloses, teaches, or suggests this limitation, we are not persuaded that Petitioner establishes a reasonable likelihood of prevailing on this asserted ground.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner fails to demonstrate a reasonable likelihood of prevailing on its challenge to the patentability of claims 1–28 of the '582 patent.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is denied as to all challenged claims of the '582 patent.

IPR2016-00999
Patent 8,311,582 B2

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