

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHEMTRONICS USA, INC.,
Petitioner,

v.

FLATFROG LABORATORIES AB,
Patent Owner

Case: IPR2024-00015

U.S. Patent No. 10,775,935

PATENT OWNER'S PRELIMINARY RESPONSE

Mail Stop **Patent Board**
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
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TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. BACKGROUND	2
A. Overview of the '935 Patent Invention	2
B. Relevant '935 Patent Prosecution History	8
C. Summary of Petitioner's Proposed Grounds of Unpatentability and the References Cited.....	16
III. DISCRETIONARY FACTORS FAVOR DENIAL OF INSTITUTION	17
A. 35 U.S.C § 325(d) Weighs in Favor of Denying Institution.....	18
1. Part 1: The Same And/Or Substantially The Same Art and Arguments Were Previously Presented To The Office.....	20
a. Petitioner's Key Reference for Both Grounds (Han) Was Previously Considered by the Office	20
b. Petitioner's Arguments Are The Same Or Substantially The Same As Those Previously Considered By The Office	24
2. Part 2: Petitioner Fails To Demonstrate A Material Error By The Office.....	30
IV. CONCLUSION.....	32

TABLE OF AUTHORITIES

Page(s)

Cases

<i>Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH,</i> IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	<i>passim</i>
<i>Albany Int’l Corp. v. Kimberly-Clark Worldwide, Inc.,</i> PGR2021-00019, Paper 22 (PTAB June 22, 2021).....	30, 31
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG,</i> IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017)	<i>passim</i>
<i>Ironsource Ltd. v. Digital Turbine Inc.,</i> PGR2021- 00096, Paper 14 (PTAB Jan. 6, 2022).....	21
<i>Nokia of America Corp. v. Alexander Soto and Walter Soto,</i> IPR2023-00681, Paper 10 (PTAB Nov. 3, 2023).....	24
<i>Vital Connect, Inc. v. Bardy Diagnostics, Inc.,</i> IPR2023-00381, Paper 7 (PTAB July 11, 2023).....	31

Statutes

35 U.S.C. § 103.....	16
35 U.S.C. § 103(a)	8
35 U.S.C. § 325(d)	<i>passim</i>

I. INTRODUCTION

Patent Owner Flatfrog Laboratories AB (“Patent Owner”) respectfully requests that the Board deny institution because Petitioner Chemtronics USA, Inc. (hereinafter “Petitioner” or “Chemtronics”) has failed to demonstrate a reasonable likelihood of success in its Petition challenging claims 1-14 (the “challenged claims”) of U.S. Patent No. 10,775,935 (“the ’935 Patent”).

The Board should decline to institute under 35 U.S.C. § 325(d) because the Petition lacks merit and merely rehashes the same art and arguments previously considered by the USPTO Examiner. All of Petitioner’s Grounds rely on the Han reference, which was expressly considered by the Examiner before allowance. Moreover, all of Petitioner’s Grounds utilize ***the same arguments*** expressly considered—and overcome—before the Examiner. Indeed, the Examiner considered obviousness combinations of one reference allegedly describing a touch screen device with a frame assembly supporting a display panel (e.g., Kukulj) with references allegedly describing a frame configured to induce a parabolic curvature (e.g., Christansson). The inventors overcame such a combination as not obvious, as the Examiner recognized the patentability of the claims over such arguments.

Despite this prosecution history, Petitioner utilizes previously-considered art, and follows the same arguments that the Examiner previously rejected. Petitioner

does not assert that anyone else invented a touch screen device with a frame assembly inducing a parabolic curvature like the one claimed in the '935 Patent. Petitioner offers no references that allegedly anticipate any claims of the '935 Patent. Instead, Petitioner offers the same obviousness arguments previously considered—combining one reference allegedly describing a touch screen device with a frame assembly supporting a display panel (e.g., Cheng in Ground 1 or Cao in Ground 2) with alleged teachings of a frame configured to induce a parabolic curvature (e.g., Han in view of Zhao in Ground 1 or Han in view of Shin in Ground 2). Thus, this Petition is wholly duplicative of arguments already considered by the Office.

For at least these reasons, Petitioner has failed to meet its burden of showing a reasonable likelihood of prevailing, and the Board should exercise its discretion to deny institution.

II. BACKGROUND

A. Overview of the '935 Patent Invention

The '935 Patent relates to the field of optical touch sensitive systems, such as those used in large screen interactive displays or “touch screens,” which allow multiple users to work together on a large display. More specifically, the '935 Patent relates to optical touch sensitive panels that utilize light, such as infrared lights, and direct light paths above the touch surface between light emitters and receivers in

order to detect touch. *See* Ex. 1001, '935 Patent at 1:15-22, 1:26-46.

Touch sensitive panels, called above surface optical touch systems, can contain a plurality of optical emitters and optical receivers arranged around the periphery of a touch surface to create a grid of intersecting light paths above the touch surface. *Id.* at 1:26-31. An object (such as a pen or finger) that touches the touch surface will block certain ones of the light paths. *Id.* at 1:31-33. Based on the identity of the receivers detecting a blocked light path, a processor can determine the location of the intercept between the blocked light paths, and thus detect the location of the one object (single-touch detection). *Id.* at 1:33-38.

The '935 Patent inventors recognized that existing optical touch systems lacked the accuracy necessary for finer tasks, such as writing. For example, with conventional touchscreens, the user experienced unintended visual artifacts when writing with a pen, stylus, or finger, such as “hooks” that appeared at the beginning of a written character and “tails” that appeared at the end of a character. Existing touchscreens also registered unintended touches (called “pre-touch” and “false touch”). The '935 Patent describes prior approaches that failed to provide adequate solutions. For example, bringing the light closer to the touch surface to improve accuracy was generally not possible because the touch surface was typically a glass plate. *Id.* at 1:56-63. Directing the light closer to the glass plate touch surface causes

distortions in the plate having a large effect on the light signal, making such plates unsuitable for increasing accuracy. *Id.*

Additionally, frames for assembling the plate of the optical touch sensitive system and a panel, such as an LCD panel, were known to introduce distortion in the form of uncontrolled warpage to an intended flat plate, i.e., an undesired twist or curve in the plate can be introduced even if it is usually flat. *Id.* at 1:64-2:4. The uncontrolled warpage may distort or even block the light transmitted across the plate, due to uncontrolled twisting of the frame when it is attached to the panel. *Id.* Existing methods to minimize glass warpage were unsuitable for touch sensitive systems because they typically require bulky frames at the border of the glass and/or pressure points closer to the center of the panel that intruded on the glass surface, causing distortions or break of light. *Id.* at 2:5-17.

In order to solve the many issues in these conventional systems, the inventors of the '935 Patent created an improved frame assembly for holding a plate of an optical touch sensitive system relative to a panel, allowing for improved precision, increased compactness, cost-effectiveness, and controlled curvature. Notably, the '935 Patent inventors recognized that inducing controlled curvature can create a concave, parabolic shaped touchscreen that is conducive to transmitting as much light as possible to the detectors, thus having far superior performance compared to

conventional systems with flat or convex touchscreens. *Id.* at 2:18-25. This inventive concave, parabolic touchscreen (or “glass”), facilitates a lower contact detection height (CDH) and improves contact detection, lift-off detection, and overall system performance, virtually eliminating the problems that plagued prior systems.

The inventors of the '935 Patent also discovered that providing a controlled induced curvature in the form of a concave parabolic glass prevents distortion and results in a significant increase in the amount of light signal received by the detectors, which greatly enhances system performance and improves the ability of the system to intelligently distinguish between different pens, erasers, palms, and fingers on the screen. *Id.* at 3:8-20; 3:24-34; 6:14-21; Fig. 1. The claimed invention is thus directed to such touch sensing apparatus, and method of assembling it, that includes a frame assembly where configuring it to support a plate having a touch surface (e.g., glass) includes inducing a parabolic curvature in the touch surface. *Id.* at Claim 1; 3:33-35; 10:35-39; 12:19-26; 16:8-13; 16:18-27; 16:56-62; 17:13-25; 19:48-67.

The '935 Patent explains that its claimed invention includes a touch plate that is curved in two axes. *See id.* at Claim 1. For example, Figures 12a and 12b of the '935 Patent illustrate an embodiment where the touch plate 10 is curved in two axes. *Id.* at 16:63-65. Figures 12a and 12b are reproduced below:

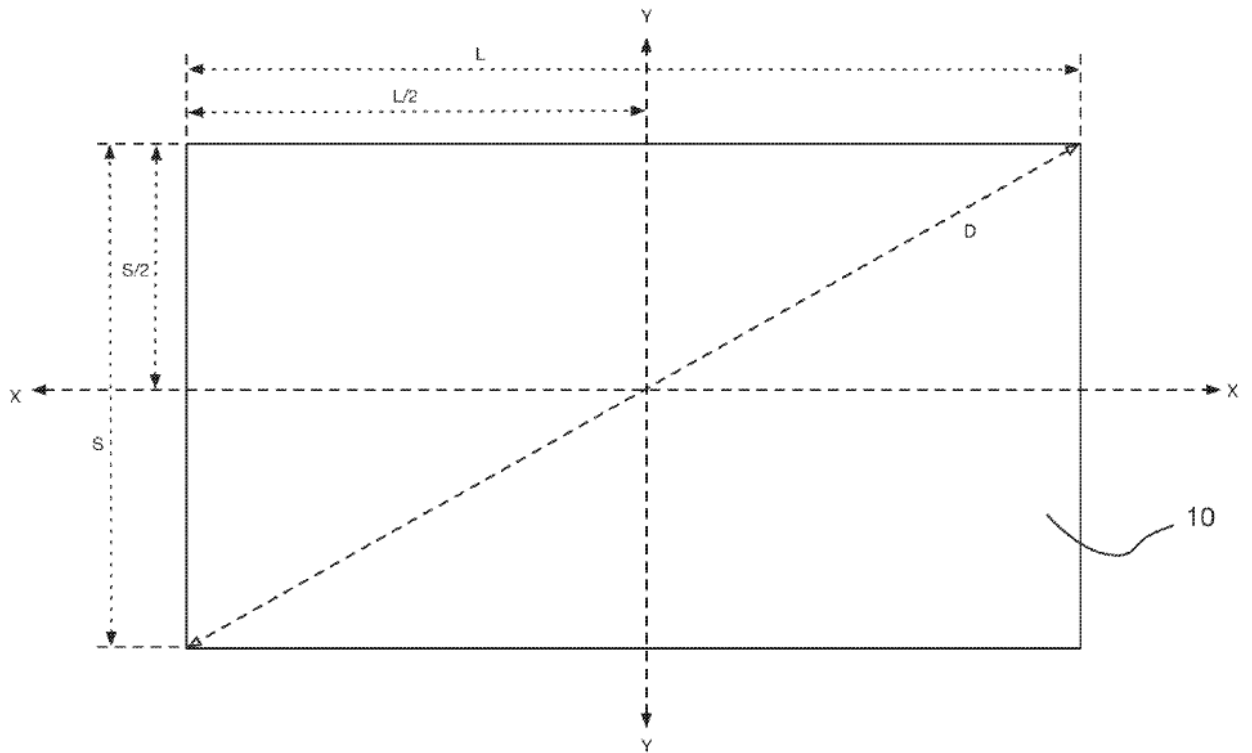


Figure 12a

Id. at Fig. 12a (showing a top plan view of touch plate 10).

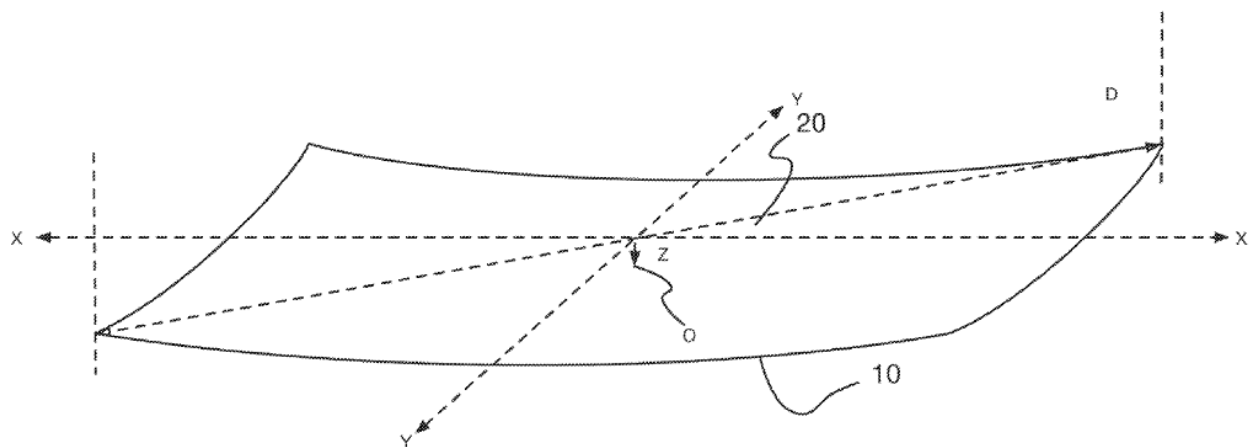


Figure 12b

Id. at Fig. 12b (showing an isometric view of touch plate 10). As shown, the plate is curved in a concave direction relative to the x-axis and is also curved in a concave

direction relative to the y-axis. *Id.* at 16:67-17:2. The x-axis is defined as the axis running parallel to and equidistant from the pair of long edges of the rectangle and passing over the center point O on the touch surface. *Id.* at 17:3-6. Similarly, the y-axis is defined as the axis running parallel to and equidistant from the pair of short edges of the rectangle and passing over the center point O on the touch surface. *Id.* at 17:8-13.

Additionally, Figures 12c and 12d shows respective section views along the x-axis and y-axis of the touch plate 10 of Figures 12a and 12b above. *Id.* at 17:14-16. In the example described, the glass is shaped such that the touch surface follows a parabolic curve relative to the x-axis. *Id.* at 17:18-20. The figures are reproduced below:

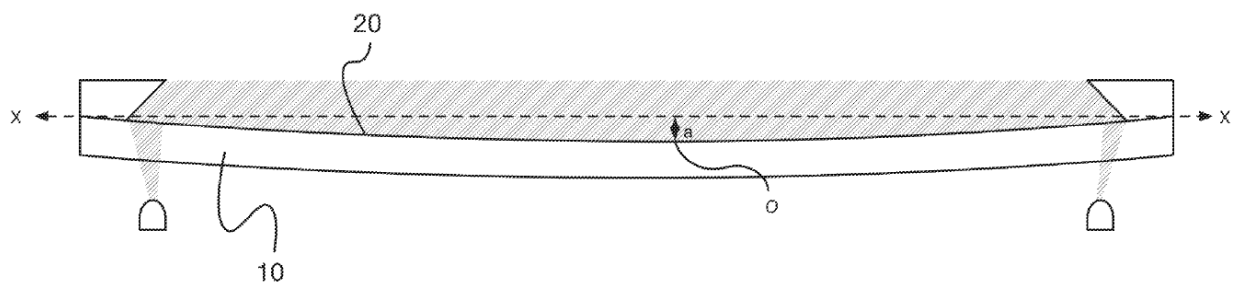


Figure 12c

Id. at Fig. 12c (showing a section view along the x-axis).

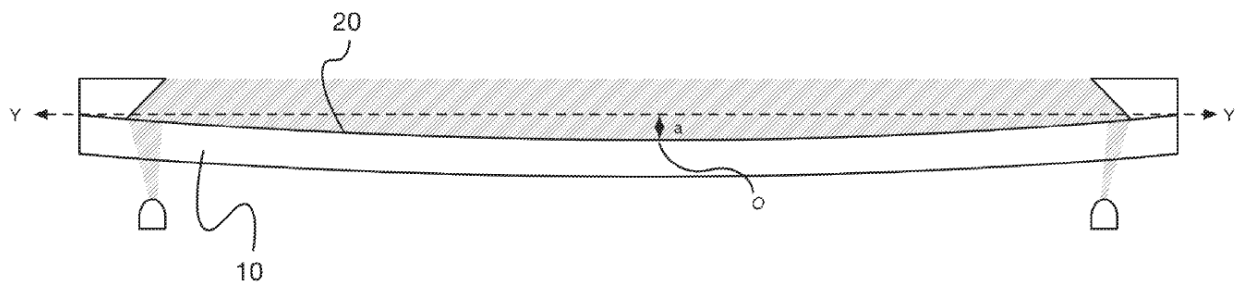


Figure 12d

Id. at Fig. 12(d) (showing a section view along the y-axis). The center point O of touch surface 10 is the center of the touch surface and parallel with midpoint of the x-axis, and where the curvature of the touch surface 10 is parabolic, the maximum distance a between the touch surface and the x-axis is at the center point O. *Id.* at 17:20-25.

Such described invention prevents distortion and results in a significant increase in the amount of light signal received by the detectors, which greatly enhances system performance and improves the ability of the system to intelligently distinguish between fine objects on the screen.

B. Relevant '935 Patent Prosecution History

During prosecution of the application that led to the '935 Patent, the Examiner issued a final office action on April 7, 2020, rejecting all claims under 35 U.S.C. § 103(a) as allegedly obvious over Kukulj (US Patent/PGPub. No. 20120223916) in view of Christiansson (US Patent/PGPub. No. 20130044073), and certain dependent

claims allegedly obvious in further view of RYU (US Patent/PGPub. No. 20160295711). *See* Ex. 1013 ('935 Patent File History) at 504-519.

To support this rejection, the Examiner relied on Kukulj for a touch screen device with a frame having multiple edges and supporting a display panel, and a method for assembling it. *Id.* at 505-06, 511-513. However, as the Examiner acknowledged, Kukulj does not teach that the frame assembly and plate “induces a curvature in the touch surface” as claimed. *Id.* at 507, 513-14. The Examiner combined Kukulj with Christiansson for its alleged teachings that its frame assembly of touch-sensitive apparatus may be curved, i.e., that Christiansson teaches a frame assembly that induces a curvature in the touch surface. *Id.* at 507-08, 514-15. To support this combination, the Examiner stated that:

It would have been obvious to a person having ordinary skill in the art at the time the invention's effective date was filed to combine **Kukulj** teaching method of assembling touch sensing apparatus comprising frame, plate, plurality of emitters and receivers with **Christiansson et al.** teaching of method of assembling touch sensing apparatus comprising curved at center of sensing surface *to effectively accommodate differences in design and manufacturing optical sensing surface by providing curved sensing surface (Christiansson et al.'s [0071])*.

Id. at 508, 514-15. The Examiner also alleged that such curvature is parabolic concave in view of Kukulj's teachings of parabolic reflectors. *Id.*

Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

For certain dependent claims, the Examiner relied on the combination above in further view of RYU for additional elements regarding the claimed curvature, such as having a first curvature when not configured in the frame assembly and a second curvature greater than the first curvature after the plate is configured in the frame assembly or being defined along an edge of the plate, and so forth. *Id.* at 508-513, 515-18.

The Applicant provided the Han reference (U.S. 2019/0235701) to the Examiner on May 29, 2020, as shown below:

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Application No.	16/706438
		Filing Date	December 6, 2019
		First Named Inventor	Aleksander Kocovski
		Art Unit	2628
(Multiple sheets used when necessary)		Examiner	Lam, Vinh Tang
SHEET 1 OF 2		Attorney Docket No.	FFOG.053C4

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

Id. at 208.

The Applicant then held an interview with the Examiner on June 9, 2020, and discussed the claim interpretation and the cited references, including the rejections

based on Kukulj and Christiansson. *Id.* at 206-07, 149. In light of these discussions on claim interpretation and the cited references, the Examiner proposed claim amendments to advance prosecution. *Id.* at 206-07, 149. Applicant requested consideration after final in order to continue prosecution, whereupon the Examiner initiated a subsequent interview proposing amendments to the claims. *Id.* at 109. Conditioned on the entering of the Examiner's Amendments, a Notice of Allowance was issued allowing all claims. In particular, the Examiner's Amendment included the following amendments to the independent claims:

1. (Currently Amended) A method for assembling a touch sensing apparatus, the touch sensing apparatus comprising a display panel, a plate including a touch surface, and a frame assembly,

wherein the frame assembly includes:

a first edge extending between a first end point and an opposite second end point; and

a second edge ~~perpendicular to the first edge~~ extending between the second end point and a third end point; and

~~a flat plane defined by the first edge and the second edge; and~~

~~wherein the touch surface includes a center point;~~

the method comprising:

configuring the frame assembly to support the display panel;

Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

arranging a plurality of emitters adjacent to a periphery of the plate, said plurality of emitters configured to emit light to propagate over the touch surface;

arranging a plurality of detectors arranged adjacent to the periphery of the plate, said plurality of detectors configured to receive light from the set of emitters; and

configuring the frame assembly to support the plate;

wherein configuring the frame assembly to support the plate includes inducing a

parabolic curvature in the touch surface **relative to a first axis and relative to a second axis perpendicular to the first axis, said first axis is parallel to a line between the first end point and the second end point and said second axis is parallel to a line between the second end point and the third end point** ~~such that the center point moves further away from the flat plane.~~

Id. at 103-04.

Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

10. (Currently Amended) A touch sensing apparatus comprising:
- a display panel;
 - a plate having a width, a length and a periphery, the plate further including a touch surface ~~having a center point;~~
~~a flat plane defined by a first edge of the touch surface and a second edge of the touch surface perpendicular to the first edge;~~
 - one or more emitters arranged adjacent to the periphery of the plate and configured to emit light across the touch surface of the plate;
 - a set of detectors arranged adjacent to the periphery of the plate and configured to receive light from the set of emitters, and
 - a frame assembly, the frame assembly comprising:
 - a first frame element configured to support the display panel; and
 - a second frame element arranged around at least a portion of the periphery of the plate, the second frame element having a first portion extending along an edge of the plate and a second portion opposed to the touch surface;
- wherein the plate has a first curvature in the touch surface when not installed in the frame assembly, and wherein the plate has a second curvature **along the width and along the length** in the touch surface ~~greater than the first curvature~~ when the plate is installed in the frame assembly, **said second curvature is parabolic;**
- ~~wherein the frame assembly is arranged to induce the second curvature such that the center point of the touch surface causes the center point to move further away from the flat plane, and~~

Id. at 105-06.

Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

Together with the Notice of Allowance, the Examiner specifically considered the Han reference:

Receipt date: 05/29/2020

16/706,438 - GAU: 2628

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Multiple sheets used when necessary)</i> SHEET 1 OF 2	Application No.	16/706438
	Filing Date	December 6, 2019
	First Named Inventor	Aleksander Kocovski
	Art Unit	2628
	Examiner	Lam, Vinh Tang
	Attorney Docket No.	FFOG.053C4

PTO/SB/08 Equivalent

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

...

Examiner Signature	/VINH T LAM/	Date Considered	06/30/2020
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
T ¹ - Place a check mark in this area when an English language Translation is attached.			
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L/			

Id. at 124.

The Examiner's Reasons for Allowance explained that "[t]he subject matter of the independent claims could either not be found or was not suggested in the prior art of record" and, in particular, that "[t]he subject matter not found was a touch

sensitive device including . . . ***wherein configuring the frame assembly to support the plate includes inducing a parabolic curvature in the touch surface. . . .***” *Id.* at 100-101 (emphasis added). Specifically:

The subject matter of the independent claims could either not be found or was not suggested in the prior art of record. The subject matter not found was a touch sensitive device including

“...a first edge extending between a first end point and an opposite second end point; and

a second edge extending between the second end point and a third end point;

...wherein configuring the frame assembly to support the plate includes inducing a parabolic curvature in the touch surface relative to a first axis and relative to a second axis perpendicular to the first axis, said first axis is parallel to a line between the first end point and the second end point and said second axis is parallel to a line between the second end point and the third end point ” (Claim 1)

“...wherein the plate has a first curvature in the touch surface when not installed in the frame assembly, and wherein the plate has a second curvature along the width and along the length in the touch surface greater than the first curvature when the plate is installed in the frame assembly, said second curvature is parabolic...” (Claim 10),

Id. at 100-101.

C. Summary of Petitioner's Proposed Grounds of Unpatentability and the References Cited

Petitioner contends that claims 1-14 would have been obvious under pre-AIA 35 U.S.C. § 103. The Petition raises these grounds of alleged obviousness based on the following references:

1. Chinese Patent No. 20338618 (“Cheng”);
2. U.S. Patent Publication No. 2019/0235701 (“Han”);
3. U.S. Patent Application Publication No. 2017/0123257 (“Zhao”);
4. U.S. Patent No. 9,291,845 (“Shin”);
5. U.S. Patent No. 9,983,626 (“Cao”).

The Petition asserts the following grounds of alleged invalidity under 35 U.S.C. § 103:

Ground	'935 Patent Claim(s)	Primary Reference	Secondary Reference(s)
1	1-14	Cheng	Han and Zhao
2	1-14	Cao	Han and Shin

Petitioner relies on primary references Cheng (Ground 1) or Cao (Ground 2) for allegedly teaching a touch screen device with a frame supporting a touch screen panel and a method for assembling it. In combination, Petitioner relies on Han in further view of Zhao (Ground 1) or Shin (Ground 2) for allegedly teaching a frame

configured to induce a parabolic curvature. Pet. at 27.

III. DISCRETIONARY FACTORS FAVOR DENIAL OF INSTITUTION

The Petition should be denied pursuant to 35 U.S.C. § 325(d). Employing a framework that “reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown,” the Director will discretionarily deny institution when: (1) “the same or substantially the same art previously was presented to the Office” **or** “the same or substantially the same arguments previously were presented to the Office”; and (2) the petitioner does not “demonstrate[] that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

Within this two-part framework, the Board considers a number of non-exclusive factors in evaluating whether to exercise its discretion under § 325(d). *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first para.) (“*Becton, Dickinson*”); *see also Advanced Bionics* at 9–11. The factors set forth in *Becton, Dickinson* are as follows:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;

- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art;
- (e) whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson at 17–18.

For Part 1 of the *Advanced Bionics* framework, the Board first evaluates *Becton, Dickinson* factors (a), (b), and (d). *Advanced Bionics* at 10. If it is determined that the same or substantially the same art or arguments were previously presented to the USPTO, then under Part 2 Board considers factors (c), (e), and (f) to assess “whether the petitioner has demonstrated a material error by the Office” in its prior consideration of that art or arguments. *Id.*

A. 35 U.S.C § 325(d) Weighs in Favor of Denying Institution

The Petition should be denied pursuant to 35 U.S.C. § 325(d) because the Petition’s main reference for both Grounds was previously considered by the Office, **and** because the obviousness arguments are substantially the same of those considered during examination. *Advanced Bionics* at 8. As such, Part 1 is clearly met and Petitioner fails to even address Part 2.

More specifically, the Petition relies on Han, *a reference expressly considered by the Office during prosecution*, for claim limitations related to inducing a parabolic curvature in the touch surface. *See* Pet. at 27 (Ground 1), 73 (Ground 2). *Additionally*, the Petition merely rehashes substantially the same arguments previously rejected by the Examiner—that is, combining a primary reference for its teachings of a frame assembly of touch-sensitive apparatus with a secondary reference (or references) for their teachings that the frame assembly induces a curve or curvature on the touch surface parabolically away from the screen. *See id.*

Petitioner's claim that the Grounds raised by this Petition have not been previously considered during the '935 Patent's prosecution is contradicted by the clear record. As discussed in Section II.B above, Han was specifically cited in an Information Disclosure Statement and expressly signed off by the Examiner as considered at the time of allowance. Additionally, Petitioner's obviousness arguments presented are substantially the same as those the Applicant overcame during prosecution, including by entering an Examiner's Amendment to the claims. *See* Section II.B above. Petitioner fails to even attempt to address how the Office

materially erred in its prior consideration of Han or its obviousness arguments.¹ *See id.* at 18.

Simply put, the Petition is a rehash of the art, rejections, arguments, and reasons for allowance already considered during the prosecution of the '935 Patent, making this Petition ripe for denial of institution under § 325(d).

1. *Part 1: The Same And/Or Substantially The Same Art and Arguments Were Previously Presented To The Office*

a. Petitioner's Key Reference for Both Grounds (Han) Was Previously Considered by the Office

As discussed in Section II.B above, Han was specifically cited in an Information Disclosure Statement and expressly signed off by the Examiner as considered during allowance. "Previously presented art includes art made of record by the Examiner, and art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS), in the prosecution history of the challenged patent." *Advanced Bionics*, IPR2019-01469 Paper 8 at 7-8. Further, the Board has construed "previously presented" in 35 U.S.C. § 325(d) to refer to art and arguments

¹ Petitioner's submission of Infringement Contentions served in district court by Patent Owner are wholly irrelevant to the finding of validity of the '935 Patent claims by the Office.

presented to the Office *prior to* the filing of the petition at issue. *Ironsource Ltd. v. Digital Turbine Inc.*, PGR2021- 00096, Paper 14 at 52 (PTAB Jan. 6, 2022).

Han is relied on by Petitioner under both Grounds for its alleged “parabolically curved touch screen elements.” Pet. at 27, 73. Petitioner utilizes Han to meet claim limitations such as those requiring that the frame assembly be configured “to support the plate; wherein configuring the frame assembly to support the plate includes **inducing a parabolic curvature in the touch surface relative to a first axis and relative to a second axis perpendicular to the first axis**, said first axis is parallel to a line between the first end point and the second end point and said second axis is parallel to a line between the second end point and the third end point.” Pet. at 40 (citing claim 1) (emphasis added); see also Pet. at 60 (“wherein the plate has a **second curvature** along the width and along the length in the touch surface when the plate is installed in the frame assembly, **said second curvature is parabolic**”) (citing claim 7) (emphasis added). Han is a necessary reference used by Petitioner for these limitations because, as acknowledged by the Petition, neither Cheng (Ground 1) nor Cao (Ground 2)—the primary references cited for each Ground—disclose it otherwise. See Pet. at 40-42, 60-64, 89-92, 110-11.

As discussed in Section II.B, these limitations including inducing a parabolic curvature in the touch surface relative to the first and second axis arranged in a

particular manner were part of the Examiner's Amendment to the independent claims of the '935 Patent, alongside the Notice of Allowance that allowed all claims upon entering the Examiner's Amendments. *See* Ex. 1013 ('935 Patent File History) at 103-04. These amendments were entered after Applicant held an interview with the Examiner and discussed the claim interpretations and cited rejections. *Id.* at 206-07, 149. And in the Examiner's Statement of Reasons for Allowance, the Examiner explained that "[t]he subject matter not found [in the prior art considered] was a touch sensitive device including [the claimed first edge and second edge where the frame assembly to support the plate includes inducing a parabolic curvature in the touch surface]." *Id.* at 100-101.

Yet, Han is now the main reference relied on by Petitioner to make the very arguments previously considered by the Patent Office at the time of allowance. As discussed in Section II.B, two weeks prior to the interview held to discuss these very limitations, Han was provided by Applicant to the Examiner in an Information Disclosure Statement (IDS) containing only a handful of other references. *Id.* at 208. Together with the Notice of Allowance, the Examiner included a statement that Han and the other few references were specifically considered on allowance:

Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

Receipt date: 05/29/2020

16/706,438 - GAU: 2628

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Multiple sheets used when necessary)</i>		Application No.	16/706438
		Filing Date	December 6, 2019
		First Named Inventor	Aleksander Kocovski
		Art Unit	2628
		Examiner	Lam, Vinh Tang
SHEET 1 OF 2		Attorney Docket No.	FFOG.053C4

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

...

Examiner Signature	/VINH T LAM/	Date Considered	06/30/2020
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
T¹ - Place a check mark in this area when an English language Translation is attached.			
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L./			

Id. at 124. Thus, the Board should defer to the previous Office evaluations of Han and patentability of the claims as indicated by the Examiner.

At bottom, Petitioner's reliance on Han to meet claim elements in both Grounds 1 and 2 clearly satisfies Part 1 under *Advanced Bionics*.

b. Petitioner's Arguments Are The Same Or Substantially The Same As Those Previously Considered By The Office

Part 1 is further met, because the Petition argues the “same or substantially the same art [or arguments] previously [] presented to the Office.” *Advanced Bionics*, IPR2019-01469 at Paper 8; *Nokia of America Corp. v. Alexander Soto and Walter Soto*, IPR2023-00681, Paper 10, 23 (PTAB Nov. 3, 2023) (denying institution as obviousness arguments were substantially the same as previously evaluated by the Office). The overlap between the IPR-asserted references and those evaluated during the '935 Patent prosecution also satisfies Part 1 of the two-part *Advanced Bionics* framework, which considers the similarities and material differences between the two sets of art, the cumulative nature of the art, and the extent of the overlap between the arguments. *Becton, Dickinson & Co.*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (factors (a), (b), and (d)).

Petitioner relies on Cheng (Ground 1) or Cao (Ground 2) for their alleged teachings of a touch screen device with a frame supporting a display panel and a method of assembling it. *See* Pet. at 27, 73. Petitioner then combines with Han in further view of Zhao (Ground 1) or Shin (Ground 2) for their alleged teachings of a parabolic curvature induced by the frame assembly. *Id.* Specifically, as the Petition states, “it would have been obvious for a POSA to combine the touch screen display

device and frame elements of Cheng, with the parabolically curved touch screen elements of Han and the curvature-inducing frame elements of Zhao.” *Id.*

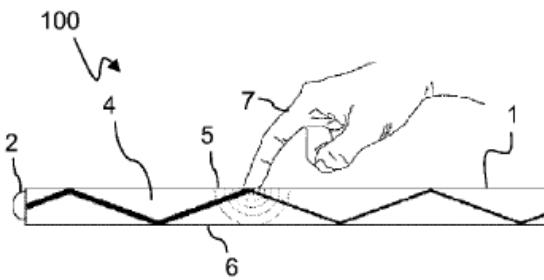
But the Office has already considered and rejected this exact type of art and argument. For example, as discussed in Section II.B, during prosecution the Examiner relied on Kukulj as a primary reference for its teachings of a touch screen device with a frame assembly having multiple edges and supporting a display panel. *See* Ex. 1013 (’935 Patent File History) at 505-06, 511-13. The Examiner then combined Kukulj with Christiansson for its alleged teachings that its frame assembly induces a curvature on the touch surface. *Id.* at 507-08, 514-15. Under this combination, it also found that such curvature is parabolic concave in view of Kukulj’s teachings of parabolic reflectors. *Id.* To support this combination, the Examiner stated that “[i]t would have been obvious to a [POSITA at the time] to combine Kukulj teaching method of assembling touch sensing apparatus comprising frame, plate, plurality of emitters and receivers with Christiansson et. al. teaching of method of assembling touch sensing apparatus comprising curved at center of sensing surface.” *Id.* at 508, 514-15.

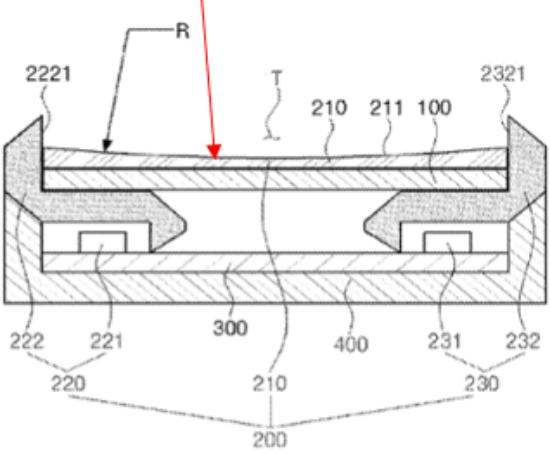
Petitioner now repeats this very argument again, while substituting Kukulj with Cheng (ground 1) or Cao (ground 2) for their teachings of a frame assembly of a touch-sensitive apparatus, and substituting Christiansson with Han and Zhao

(Ground 1) or Han and Shin (Ground 2) for their teachings of a curved touch screen to conclude that this combination renders obvious a frame assembly that includes inducing a curve or parabolic curvature of the touch surface.

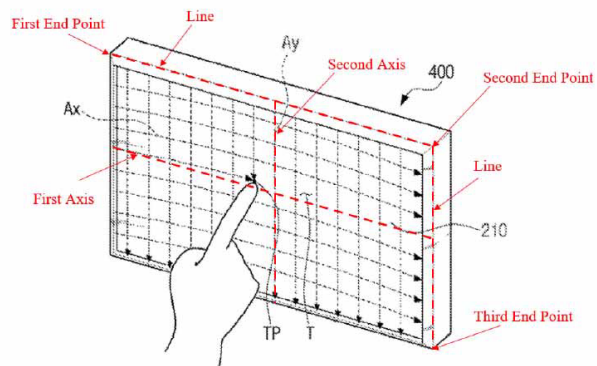
In particular, Petitioner relies on Han for its alleged induced parabolic curvature of the touch surface in the same manner that the Examiner relied on Christiansson. But like Christiansson, Han discusses curving just the “front” side of the glass, whereas the claims require that the parabolic curvature is “induced” in the touch surface “relative to a first axis **and relative to a second axis perpendicular to the first axis,**” and configuring the frame assembly to support the plate. (*See, e.g.*, Han, Figs. 3 and 7) (showing that no part of the frame is inducing any curve). But as the Examiner acknowledged, Christiansson does not teach a touch sensitive device that includes the claimed first edge and second edge where the frame assembly to support the plate includes inducing a parabolic curvature in the touch surface. *See* Ex. 1013 (’935 Patent File History) at 100-101. Neither does Han, and substituting Christiansson for Han does not advance a different set of arguments. In fact, the Petition even admits that Han is a cumulative disclosure to Christiansson. Pet. at 5.

As examples, the below table shows some of the similarities of the disclosures of Christiansson relied on by the Examiner (left) in combination with Kukulj with those of Han now relied on by Petitioner (right) in combination with Cheng or Cao:

Christiansson (Examiner cites)	Han (Petitioner cites)
<p>“FIG. 3A is a side view of a touch-sensitive apparatus 100 which includes a light transmissive panel 4, one or more light emitters 2 (one shown) and one or more light sensors 3 (one shown). The panel 4 defines two opposite and generally parallel surfaces 5, 6 and may be planar or curved.” Christiansson at [0071], Fig. 3A (emphasis added); Ex. 1013 ('935 Patent File History) at 507 (same).</p>  <p>Fig. 3A</p>	<p>“Han discloses that a cover plate of a touch screen display apparatus can be concavely curved according to a radius” and “teaches that a parabolic curvature is one advantageous shape of a touch surface.” Pet. at 4-5. “Further, other references, such as Miller, Kang, Christiansson, and Eriksson also expressly teach that touch surfaces may be curved or parabolic in shape.” <i>Id.</i> at 5.</p>

	<p>Concavely Curved Touch Surface <u>10</u></p> 
<p>Christiansson teaches a top surface 5 and center point of top surface 5 See Ex. 1013 at 507 (citing Christiansson at [0072], Fig. 3A) and a “frame assembly of touch-sensitive apparatus 100” to support a “light transmissive panel 4” plate including inducing a curvature in the touch surface as the “parallel surfaces 5, 6 [] may be ... curved.” <i>Id.</i> (citing Christiansson at [0070]-[0071], Fig. 3A). And “since surfaces 5 and 6</p>	<p>“[I]t would have been obvious to a POSA to modify Cheng’s plate to incorporate Han’s parabolic touch screen curvature along Ax and Ay directions to improve touch detection accuracy.” Pet. at 40-41. “According to Han, Cheng’s modified plate would be parabolically curved along a first axis (Ax) and a second axis (Ay) perpendicular to the first to achieve improve touch detection accuracy.” <i>Id.</i></p>

may be curved, the center point of surface 5 would move further from surface 5.” *Id.* Christiansson further teaches that, “in FIG. 3A, the light may be coupled into and out of the panel 4 directly via the edge portion that connects the top and bottom surfaces 5, 6 of the panel 4.” Christiansson at [0072]. And “Kukulj teaches **the curvature [] is parabolic concave**” by its “right side of parabolic reflectors 38.” Ex. 1013 at 508.



Pet. at 41-42 (citing Han, Fig. 2). In Han, “the first axis would be parallel to a line between the first and second endpoints and the second axis would be parallel to a line between the second and third endpoints.” *Id.*

As shown, Petitioner uses Han in the same way as Christiansson—for teaching modifying the touch screen on a frame assembly structure (Cheng with Zhao or Cao with Shin) with a curvature moving away from the center that allegedly requires inducing the touch surface to create it, and allegedly such a curvature moving away from the center as a uniform curve is parabolic and relative to a first axis and relative to a second axis perpendicular to the first axis. Thus, the USPTO

has already considered references like Han, Zhao, and Shin, having a touch surface glass with such curvature, for this argument.

Becton factors (a), (b), and (d) are satisfied here. Because the combination of art and arguments presented by Petitioner here and those considered extensively during prosecution are substantially the same, Part 1 is also met for each of the references relied on for Grounds 1 and 2.

2. *Part 2: Petitioner Fails To Demonstrate A Material Error By The Office*

Because Part 1 is met, Petitioner must demonstrate material error under Part 2. However, the Petition is silent on this point and thus fails to demonstrate “that the Office erred in a manner material to the patentability of the challenged claims,” as required under Part 2. *Advanced Bionics*, IPR2019-01469 at Paper 8. Petitioner fails to explain **any** alleged material error by the Office in its one-paragraph perfunctory § 325(d) analysis. *See* Pet. at 18. Petitioner’s failure to address Part 2 validates denial under § 325(d). *Albany Int’l Corp. v. Kimberly-Clark Worldwide, Inc.*, PGR2021-00019, Paper 22, 8-9 (PTAB June 22, 2021) (denying institution because “[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute [] review.”). Notably, Petitioner recognizes that Han was cited in an IDS

(which satisfies Part 1) but fails to even address Part 2 with respect to the Office's prior consideration of Han or similar obviousness arguments. Pet. at 18.

Petitioner merely concludes that “the Office has not previously considered the same prior art or substantially the same arguments”—but that is contrary to the Office's clear consideration of Han and other substantially similar art/arguments during prosecution. Petitioner completely fails to address why the prior consideration of Han or the combination of Kukulj with Christiansson and/or RYU is material error. Petitioner's lack of analysis is insufficient to meet the second part of the *Advanced Bionics* test, and denial under § 325(d) is appropriate.

Indeed, Petitioner does not meet its burden. To evaluate material error, the Board weighs *Becton, Dickinson* factors c, e and f. The Petition does not reference any of these factors, let alone analyze them. *Vital Connect, Inc. v. Bardy Diagnostics, Inc.*, IPR2023-00381, Paper 7, 20 (PTAB July 11, 2023) (“[W]hile there are no ‘magic words’ necessary to address material error, Petitioner's alleged grounds of unpatentability cannot establish material error *per se* under our binding precedent. . . . Otherwise, the reasonable likelihood standard of § 314(a) and the second part of the *Advanced Bionics* framework (‘material error’) would collapse into one.”).

Accordingly, the *Advanced Bionics* framework is satisfied and the Director should exercise its discretion to deny institution. *See Advanced Bionics*, IPR2019-01469, Paper 6, 8; *Albany Int'l Corp.*, PGR2021-00019, Paper 22, 10-11.

IV. CONCLUSION

For the reasons set forth above, the Board should decline to institute *inter partes* review on the Petition Grounds pursuant to 35 U.S.C. § 325(d).

Dated: January 25, 2024

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Case IPR2024-00015
Patent No. 10,775,935
Patent Owner's Preliminary Response

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Patent No. 10,775,935
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CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of January, 2024, a copy of the attached
PATENT OWNER'S PRELIMINARY RESPONSE was served by electronic
mail to the attorneys of record, at the following addresses:

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CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Preliminary Response complies with the type-volume limitation of 37 CFR §42.24(a). The word count application of the word processing program used to prepare this Preliminary Response indicates that the Preliminary Response contains 5,166 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

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