

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

NICHIA CORPORATION,)	
)	
Plaintiff,)	
)	
v.)	Case No. 1:16-cv-00681-RGA
)	
TCL MULTIMEDIA TECHNOLOGY)	
HOLDINGS, LTD. and TTE TECHNOLOGY,)	
INC.,)	
)	
Defendants.)	

DEFENDANTS' INITIAL INVALIDITY CONTENTIONS

Pursuant to Paragraph 4(d) of the District of Delaware Default Standard for Discovery, including Discovery of Electronically Stored Information (“ESI”) (“Default Standard”) and in accordance with the Scheduling Order of February 16, 2017 (“Scheduling Order”) (Dkt. 28), defendants TCL Multimedia Technology Holdings, Ltd. and TTE Technology, Inc. (“Defendants”) provide the following initial invalidity contentions for the claims that plaintiff Nichia Corporation (“Nichia”) asserted in its Default Standard Paragraph 4(c) infringement contentions, served on May 5, 2017 (collectively, the “Asserted Claims”). As set forth herein, each of the Asserted Claims is invalid pursuant to 35 U.S.C. §§ 101, 102, 103 and/or 112.

I. PRELIMINARY STATEMENT & RESERVATIONS

On May 5, 2017, Nichia served its *Disclosure of Asserted Claims and Preliminary Infringement Contentions* (“Infringement Contentions”) on Defendants, alleging infringement of the following Asserted Claims:

- U.S. Patent No. 7,855,092 (“the ’092 Patent”) – claims 1-3, 7-9, and 12-13;
- U.S. Patent No. 8,309,375 (“the ’375 Patent”) – claim 4;
- U.S. Patent No. 7,915,631 (“the ’631 Patent”) – claims 1-2, 4, and 6-11; and

- “said active layer comprising a gallium nitride based semiconductor containing indium and being capable of emitting a blue color light having a spectrum with a peak wavelength within the range from 420 to 490 nm”
- “preparing a phosphor capable of absorbing a part of the blue color light emitted from said light emitting component and emitting a yellow color light having a broad emission spectrum comprising a peak wavelength existing around the range from 510 to 600 nm and a tail continuing beyond 700 nm”
- “wherein selection of said phosphor is controlled based on an emission wavelength of said light emitting component”
- “combining said light emitting component and said phosphor so that the blue color light from said light emitting component and the yellow color light from said phosphor are mixed to make a white color light, wherein a chromaticity point of the white color light is on a straight line connecting a point of chromaticity of the blue color light and a point of chromaticity of the yellow color light”
- “wherein a content of said phosphor in said light emitting device is selected to obtain a desired chromaticity of the white color light”

Claim 4

- “the emission spectrum of said phosphor comprises a peak wavelength existing around the range from 530 to 570 nm and a tail continuing beyond 700 nm”

IV. THE '631 PATENT

A. Invalidity Under 35 U.S.C. § 101

The Asserted Claims of the '631 Patent are invalid for failing to recite patentable subject matter under 35 U.S.C. § 101. Each of the Asserted Claims of the '631 Patent are invalid for

double patenting because they cover the same invention claimed in the '092, '375 and '959 Patents.

Defendants' investigation concerning invalidity of the '631 Patent under Section 101 is ongoing. For example, the claim terms have not been construed, Nichia has not provided adequate infringement contentions or its proposed claim constructions, and discovery is ongoing. Thus, Defendants reserve the right to supplement and/or amend their invalidity contentions under Section 101, including for double patenting.

B. Invalidity Under 35 U.S.C. §§ 102 and 103

1. Identity of Prior Art³

Defendants identify the following references as prior art that anticipates and/or renders obvious the Asserted Claims of the '631 Patent under 35 U.S.C. § 102(a), (b) and (e) or 35 U.S.C. § 103, either alone or in combination.

United States Patents

Table 1			
Patent No.	Inventor(s)	Date of Issue	Basis
U.S. Patent No. 2,452,522	H. Leverenz	10/26/1948	103/State of the art
U.S. Patent No. 3,264,133	W. Brooks	08/02/1966	103/State of the art
U.S. Patent No. 3,510,732	R. Amans	5/5/1970	103/State of the art
U.S. Patent No. 3,593,055	J. Geusic	07/13/1971	103/State of the art
U.S. Patent No. 3,654,463	J. Geusic	04/04/1972	103/State of the art
U.S. Patent No. 3,691,482	D. Pinnow	09/12/1972	103/State of the art
U.S. Patent No. 3,699,478	D. Pinniow L. Van Uitert	10/17/1972	103/State of the art
U.S. Patent No. 3,755,697	D. Miller	08/28/1973	103/State of the art
U.S. Patent No. 3,763,405	T. Mitsuhata	10/02/1973	103/State of the art
U.S. Patent No. 3,764,862	A. Jankowski	10/09/1973	103/State of the art
U.S. Patent No. 3,774,021	B. Johnson	11/20/1973	103/State of the art
U.S. Patent No. 3,774,086	C. Vincent, Jr.	11/20/1973	103/State of the art

³ Defendants incorporate by reference all prior art references cited in the patents and patent publication listed herein and their file histories, as well as any patents later issuing from any applications listed herein.

U.S. Patent No. 3,816,576	F. Auzel	06/11/1974	103/State of the art
U.S. Patent No. 3,819,974	D. Stevenson W. Rhines H. Maruska	06/25/1974	103/State of the art
U.S. Patent No. 3,875,456	T. Kano T. Saitoh A. Suzuki T. Suzuki S. Minagawa Y. Otomo	04/01/1975	103/State of the art
U.S. Patent No. 3,909,788	G. Kaelin J. Pellegrino	09/30/1975	103/State of the art
U.S. Patent No. 3,932,881	Y. Mita E. Nagasaa	01/13/1976	103/State of the art
U.S. Patent No. 4,024,070	R. Schuil	05/17/1977	103/State of the art
U.S. Patent No. 4,090,189	C. Fisler	05/16/1978	103/State of the art
U.S. Patent No. 4,114,366	K. Renner C. Williams	09/19/1978	103/State of the art
U.S. Patent No. 4,167,307	W. Cirkler H. Kriiger	09/11/1979	103/State of the art
U.S. Patent No. 4,342,906	G. Hyatt	08/03/1972	103/State of the art
U.S. Patent No. 4,479,886	A. Kasenga	10/30/1984	103/State of the art
U.S. Patent No. 4,508,760	R. Olson R. Versic	04/02/1985	103/State of the art
U.S. Patent No. 4,550,256	G. Berkstresser T. Huo J. Shmulovich	10/29/1985	103/State of the art
U.S. Patent No. 4,599,537	S. Yamashita	07/08/1986	103/State of the art
U.S. Patent No. 4,641,925	B. Gasparaitis P. Richardson	02/10/1987	103/State of the art
U.S. Patent No. 4,678,338	K. Kitta Y. Kanazawa Y. Otomo	07/07/1987	103/State of the art
U.S. Patent No. 4,713,577	D. Gualtieri S. Lai	12/15/1987	103/State of the art
U.S. Patent No. 4,727,283	J. van Kemenade G. Sibers K. Johannes J. ter Vrugt	02/23/1988	103/State of the art
U.S. Patent No. 4,766,526	K. Moriomoto H. Toki	08/23/1988	103/State of the art
U.S. Patent No. 4,772,885	K. Uehara W. Ohta T. Enomoto	09/20/1988	103/State of the art
U.S. Patent No. 4,797,890	F. Inaba	01/10/1989	103/State of the art
U.S. Patent No. 4,894,583	G. Berkstresser	01/16/1990	103/State of the art

	C. Brandle, Jr. J. Shmulovich		
U.S. Patent No. 4,922,103	K. Kawajiri H. Sunagawa N. Nozaki Y. Hosoi K. Takahashi	05/01/1990	103/State of the art
U.S. Patent No. 4,935,960	K. Takato T. Tojo K. Kinoshita Y. Yamamoto	06/19/1980	103/State of the art
U.S. Patent No. 4,966,862	J. Edmond	10/30/1990	103/State of the art
U.S. Patent No. 4,975,808	D. Bond K. Kaschke	12/04/1990	103/State of the art
U.S. Patent No. 4,992,704	J. Stinson	02/12/1991	103/State of the art
U.S. Patent No. 4,992,837	K. Sakai Y. Kushiro K. Nishimura	02/12/1991	103/State of the art
U.S. Patent No. 5,001,609	R. Garner D. Silverglate G. Smestad G. Smith J. Snyder	03/19/1991	103/State of the art
U.S. Patent No. 5,004,948	P. Kinczel L. Balazs G. Sajo	04/02/1991	103/State of the art
U.S. Patent No. 5,027,168	J. Edmond	06/25/1991	103/State of the art
U.S. Patent No. 5,058,997	J. Dickerson N. Poley	10/22/1991	103/State of the art
U.S. Patent No. 5,091,794	S. Suzuki	02/25/1992	103/State of the art
U.S. Patent No. 5,097,145	S. Hayashi	03/17/1992	103/State of the art
U.S. Patent No. 5,118,985	R. Patton K. Mishra E. Dale C. Lagos	06/02/1992	103/State of the art
U.S. Patent No. 5,126,214	H. Tokailin C. Hosokawa T. Kusomoto	06/30/1992	103/State of the art
U.S. Patent No. 5,126,868	S. Kizaki T. Ono K. Kozima M. Itakura T. Aoki	12/22/1989	103/State of the art
U.S. Patent No. 5,132,825	S. Miyadera	07/21/1992	103/State of the art
U.S. Patent No. 5,153,889	H. Sugawara M. Ishikawa	10/06/1992	103/State of the art

	Y. Kokubun Y. Nishikawa S. Naritsuka K. Itaya G. Hatakoshi M. Suzuki		
U.S. Patent No. 5,177,593	M. Abe	01/05/1993	103/State of the art
U.S. Patent No. 5,189,496	M. Kuwawa	02/23/1993	103/State of the art
U.S. Patent No. 5,198,479	T. Shiobara K. Futatsumori K. Arai	03/30/1993	103/State of the art
U.S. Patent No. 5,208,462	J. O'Connor O. Aina	05/04/1993	103/State of the art
U.S. Patent No. 5,254,849	H. Murakami M. Funada	10/19/1993	103/State of the art
U.S. Patent No. 5,291,507	M. Haase H. Cheng J. DePuydt J. Qiu	03/01/1994	103/State of the art
U.S. Patent No. 5,302,025	M. Kleinerman	04/12/1994	103/State of the art
U.S. Patent No. 5,332,906	R. Lauf S. McElhaney J. Bates	07/26/1994	103/State of the art
U.S. Patent No. 5,338,944	J. Edmond H. Kong V. Dmitriev G. Bulman	08/16/1994	103/State of the art
U.S. Patent No. 5,343,323	M. Lynn G. Miller	08/30/1994	103/State of the art
U.S. Patent No. 5,350,650	J. Gasper G. Evans C. Rider M. Simons	09/27/1994	103/State of the art
U.S. Patent No. 5,369,289	M. Tamaki T. Kozawa	11/29/1994	103/State of the art
U.S. Patent No. 5,405,709	J. Littman S. VanSlyke	04/11/1995	103/State of the art
U.S. Patent No. 5,439,705	K. Budd	08/08/1995	103/State of the art
U.S. Patent No. 5,440,197	P. Gleckman	08/08/1995	103/State of the art
U.S. Patent No. 5,442,467	L. Silverstein T. Fiske R. Bruce R. Sprague	08/15/1995	103/State of the art
U.S. Patent No. 5,463,212	R. Oshima R. Ohiwa M. Nishida	10/31/1995	103/State of the art

	T. Matsumoto A. Itoh Y. Takeuchi		
U.S. Patent No. 5,499,120	I. Hansen	03/12/1996	103/State of the art
U.S. Patent No. 5,512,336	M. Yamahara	04/30/1996	103/State of the art
U.S. Patent No. 5,514,627	C. Lowery D. McElfresh S. Burchet D. Adolf J. Martin	05/07/1996	103/State of the art
U.S. Patent No. 5,535,027	N. Kimura Y. Ishii M. Yoshida M. Matsuura A. Hatano Y. Narutaki S. Fujiwara Y. Izumi Y. Yamamoto	07/09/1996	103/State of the art
U.S. Patent No. 5,563,422	S. Nakamura T. Yamada M. Senoh M. Yamada K. Bando	10/08/1996	103/State of the art
U.S. Patent No. 5,565,694	K. Huang R. Chen	10/15/1996	103/State of the art
U.S. Patent No. 5,578,839	S. Nakamura T. Mukai N. Iwasa	11/26/1996	103/State of the art
U.S. Patent No. 5,583,349	M. Norman P. Holm	12/10/1996	103/State of the art
U.S. Patent No. 5,586,879	A. Szpak	12/24/1996	103/State of the art
U.S. Patent No. 5,589,786	V. Bella P. Pellegrino	12/31/1996	103/State of the art
U.S. Patent No. 5,594,751	J. Scott	01/14/1997	103/State of the art
U.S. Patent No. 5,608,554	Y. Do Y. You K. Jeong Y. You	03/04/1997	103/State of the art
U.S. Patent No. 5,660,461	R. Ignatius T. Martin	08/26/1997	103/State of the art
U.S. Patent No. 5,666,031	S. Jennato H. Rothwell, Jr.	09/09/1997	103/State of the art
U.S. Patent No. 5,670,798	J. Schetzina	09/23/1997	103/State of the art
U.S. Patent No. 5,684,354	P. Gleckman	11/04/1997	103/State of the art
U.S. Patent No. 5 695 269	R. Lippmann	12/09/1997	103/State of the art

	M. Schnars J. Nelson M. Miller		
U.S. Patent No. 5,777,350	S. Nakamura S. Nagahama N. Iwasa H. Kiyoku	07/07/1998	103/State of the art
U.S. Patent No. 5,796,376	A. Banks	08/18/1998	103/State of the art
U.S. Patent No. 5,798,537	K. Toshiba	08/25/1998	103/State of the art
U.S. Patent No. 5,825,125	F. Ligthart R. De Man C. Roozkrans D. Van Der Voort	10/20/1998	103/State of the art
U.S. Patent No. 5,861,636	A. Dutta A. Suzuki	01/19/1999	103/State of the art
U.S. Patent No. 5,907,222	J. Lengyel L. Spears	05/25/1999	103/State of the art
U.S. Patent No. 5,945,689	M. Kolke S. Asami	08/31/1999	103/State of the art
U.S. Patent No. 5,966,393	F. Hide S. DenBaars A. Heeger	10/12/1999	103/State of the art
U.S. Patent No. 6,245,259	P. Schlotter K. Höhn A. Debray R. Schmidt J. Schneider	06/12/2001	103/State of the art
U.S. Patent No. 6,258,617	K. Nitta H. Fujifmoto M. Ishikawa	07/10/20001	103/State of the art
U.S. Patent No. 6,307,218	D. Steigerwald S. Rudaz K. Thomas S. Lester P. Martin W. Imler R. Fletcher F. Kish, Jr. S. Maranowski	10/23/2001	103/State of the art
U.S. Patent No. 6,600,175	B. Baretz M. Tischler	07/29/2003	102/103/State of the art
U.S. Patent No. 6,828,170	J. Roberts J. Stam S. Reese R. Turnbull	12/07/2004	103/State of the art
U.S. Patent No. 7,615,795	B. Baretz	11/10/2009	103/State of the art

	M. Tischler		
U.S. Patent No. 8,071,996	K. Hohn A. Debray P. Schlotter R. Schmidt J. Schneider	12/06/2011	103/State of the art
U.S. Patent No. 8,963,182	B. Baretz M. Tischler	02/24/2015	103/State of the art

Foreign Patents and Patent Applications

Table 2			
Patent No.	Inventor(s)	Date of Issue	Basis
CA 1144743	C. Chenot E. Dale	04/19/1983	103/State of the art
DE 3804293	M. Friedrich W. Guenter	08/24/1989	103/State of the art
DE 4218289	D. Kardon C. Moore	12/10/1992	103/State of the art
DE 4442599	M. Haase H. Bechtel	11/30/1994	103/State of the art
DE 4442706	M. Haase H. Bechtel	12/01/1994	103/State of the art
DE 8907530	Z. Contraves	08/03/1989	103/State of the art
DE 19655445	R. Schmidt P. Schlotter J. Schneider	09/22/2016	103/State of the art
EP 0647694	J. Kido	10/13/1994	103/State of the art
EP 0716457	S. Nakamura S. Nagahama N. Iwasa H. Kiyoku	06/12/1996	103/State of the art
EP 1221724	A. Debray K. Höhn P. Schlotter R. Schmidt K. Schneider	07/10/2002	103/State of the art
GB 1305111	D. Pinnow L. Van Uitert	01/31/1973	103/State of the art
GB 1332462	TCA Corp.	10/03/1973	103/State of the art
GB 1417802	M. Lincoln	12/17/1975	103/State of the art
GB 2000173	M. Van Tol	01/04/1979	103/State of

	J. Robertson		the art
GB 2282600	J. Hay B. Woodfine	04/12/1995	103/State of the art
Japanese Patent Pub. No. S50-79379	Fujitsu, Ltd.	11/24/1973	103/State of the art
Japanese Patent Pub. No. 05-183782	T. Hiroshi M. Yoshito O. Hideki	07/23/1993	103/State of the art
Japanese Patent Pub. No. H08-78732	H. Hironobu	03/22/1996	103/State of the art
Japanese Patent Pub. No. 2003051620	O. Tadahiro	02/21/2003	103/State of the art
Japanese Patent Pub. No. 2004335740	K. Yasuki N. Shinobu W. Masaaki	11/25/2004	103/State of the art
Japanese Patent Pub. No. 2004311857	T. Yasuji	11/04/2004	103/State of the art
Japanese Patent Pub. No. 07-176794	Y. Shimizu	07/14/1995	102/103/State of the art
Japanese Patent Pub. No. H02-261285	T. Kazutaka K. Masaru	01/24/1990	103/State of the art
Japanese Patent Pub. No. H04-264188	M. Naoyuki	09/18/1992	103/State of the art
Japanese Patent Pub. No. H04-269718	N. Yoshihiro	09/25/1992	103/State of the art
Japanese Patent Pub. No. H04-63162	M. Susumu	05/29/1992	103/State of the art
Japanese Patent Pub. No. H05-152609	Y. Tadatsu	06/18/1993	102/103/State of the art
Japanese Patent Pub. No. H06-207170	S. Hiroshi M Masahide A. Hisahiro K. Tadashi	07/26/1994	103/State of the art
Japanese Patent Pub. No. H07-66457	Y. Sadahisa N. Hisashi	03/10/1995	103/State of the art
Japanese Patent Pub. No. H07-99345	K. Matoba	04/11/1995	103/State of the art
Japanese Patent Pub. No. H08-32121	N. Eiji	02/02/1996	103/State of the art
Japanese Patent Pub. No. H08-7614	S. Yoshinori	01/12/1996	103/State of the art
Japanese Patent Pub. No. H08-78732	N. Hironobu	03/22/1996	103/State of the art
Japanese Patent Pub. No. H09-73807	N. Eiji	03/18/1997	103/State of the art
Japanese Patent Pub. No. H52-40959	H. Takashi	10/15/1977	103/State of

	T. Akio		the art
Japanese Patent Pub. No. S51-13589	T. Tanaka	02/03/1976	103/State of the art
Japanese Patent Pub. No. S58-043584	I. Shiyunzou	03/14/1983	103/State of the art

Non-Patent Prior Art Publications

Table 3			
Authors	Title and Publication	Date of Publication	Basis
P. Schlotter R. Schmidt J. Schneider	<i>Luminescence Conversion of Blue Light Emitting Diodes</i> , Applied Physics A 64, 417-18	02/27/1997	102/103/State of the art
D. Pinnow L. Van Uitert M. Feldman	<i>Photoluminescent Conversion of Laser Light for Black and White and Multicolor Displays</i> , Applied Optics, Vol. 10, No. 1	1971	103/State of the art
J. Robertson M. Van Tol W. Smits J. Heynen	<i>Colourshift of the CE⁺ Emission in Monocrystalline Epitaxially Grown Garnet Layers</i> , Philips J. Res. 36	1981	103/State of the art
M. Hoffman	<i>Improved Color Rendition in High Pressure Mercury Vapor Lamps</i> , Journal of the Illuminating Engineering Society, Vol. 6, No. 2	1977	103/State of the art
G. Blasse B. Grabmaier	<i>Luminescent Materials</i> , Springer-Verlag	1994	103/State of the art
H. Rossotti	<i>Colour, Why the World Isn't Grey</i> , Princeton Science Library	1985	103/State of the art
S. Gage M. Hodapp D. Evans H. Sorensen	<i>Optoelectronics Applications Manual</i> , Hewlett-Packard Optoelectronics Division	1977	103/State of the art
S. Nakamura T. Mukai M. Senoh	<i>Candela-class high-brightness InGaN/AlGaIn double-heterostructure blue-light emitting diodes</i> , Appl. Phys. Lett. 64 (13)	03/28/1994	103/State of the art
F. Auzel	<i>Materials and Devices Using Double-Pumped Phosphors with Energy Transfer</i> , Proceedings of the IEE, Vol. 61, No. 6	06/1973	103/State of the art
G. Wyszeccki W.S. Stiles	<i>Color Science, Concepts and Methods, Quantitative Data and Formulas</i> , Jon Wiley & Sons, Inc.	1967	103/State of the art
H. Maruska	<i>Gallium Nitride Light-Emitting</i>	1974	103/State of

	<i>Diodes</i> , Thesis (Ph.D.)--Dept. of Materials Science and Engineering, Stanford University		the art
T. Kano H. Yamamoto Y. Otomo	<i>Efficient Green-Emitting Infrared-Excited Phosphors</i> , J. Electrochem. Soc.: Solid State Science and Technology	11/1972	103/State of the art
S. Nakamura M. Senoh N. Iwasa S.Nagahama	<i>High-Power InGaN Single-Quantum-Well-Structure Blue and Violet Light-Emitting Diodes</i> , Applied Physics Letters 67, 1868	1995	103/State of the art
S. Nakamura M. Senoh N. Iwasa S.Nagahama	<i>InGaN-Based Multi-Quantum-Well-Structure Laser Diodes</i> , Jpn. J. Appl. Phys. Vol. 35, L74	1996	103/State of the art
W. O'Mara	<i>Liquid Crystal Flat Panel Displays: Manufacturing Science & Technology</i> , Van Nostrand Reinhold	1993	103/State of the art

Prior Art Systems and Products

Defendants contend that at least some of the systems and products that relate to one or more of the prior art references identified above are prior art under 35 U.S.C. §§ 102 (a), (b) and/or (g), and/or § 103. Defendants do not have complete information regarding the dates by which some of the products described in the prior art references were publicly disclosed, used, sold, or offered for sale, the circumstances under which the research, design, and development activities were conducted, and the identities of the particular individuals involved in such activities through publicly available patents, publications, and product literature. Defendants anticipate that the actual dates, circumstances, and identities of individuals will be the subject of third-party discovery during this case.

To the extent the inventions identified in the patents, publications, systems, and other prior art to the '631 Patent identified in these Invalidity Contentions were conceived by another and diligently reduced to practice before the alleged conception and reduction to practice of the

Asserted Claims of the '631 Patent, Defendants allege that such prior art inventions invalidate the Asserted Claims of the '631 Patent under 35 U.S.C. § 102 (g).

To the extent not listed herein, Defendants also incorporate (i) all references cited in any of the aforementioned prior art and all family members of prior art patents, (ii) all references and prior art cited in or on the face of the '631 Patent and during prosecution of the application giving rise to the '631 Patent, (iii) all references and prior art cited in or on the face of any related patent and patent application (including but not limited to continuations, continuations-in-part and divisional applications claiming priority to the same application as the '631 Patent) and the prosecution of such patents and applications; and (iv) the references cited in any invalidity contentions in any pending or future action or proceeding involving the '631 Patent. Defendants reserve the right to rely on these references in any way to prove the invalidity of the asserted claims of the '631 Patent.

2. Initial Invalidity Charts

In Part IV.B.1, Defendants identified certain prior art references that anticipate the Asserted Claims under at least 35 U.S.C. §§ 102 (a), (b), (e), and/or (g), either expressly or inherently, and/or render obvious the Asserted Claims under 35 U.S.C. § 103 either alone or in combination with other references.

Exemplary citations to and disclosures in certain prior art references are shown in the Prior Art Invalidity Charts in **Exhibits 631-1 to 631-4**. Persons having ordinary skill in the art may view the prior art references generally or in the context of other publications, literature, products, and understanding. Defendants incorporate by reference the references cited by the prior art references that Defendants identify in their Prior Art Invalidity Charts. Defendants reserve the right to rely on uncited portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing

context thereto, and as additional evidence that a claim limitation is known or disclosed. The citations may be evidence of express or inherent disclosure in the reference. To the extent that the Court finds that a prior art reference does not expressly disclose certain limitations in the Asserted Claims, such limitations would have been inherent and/or obvious. By mapping the claim language of the Asserted Claims to the prior art references, Defendants do not imply or admit that the claim language satisfies 35 U.S.C. § 112 or that the claim language has patentable weight.

Nothing in these Invalidity Contentions shall be treated as an admission or suggestion that any of Defendants' accused products meet any limitation of any Asserted Claim. Defendants deny infringement of each Asserted Claim. Citations from the identified prior art references are not a ratification or acceptance of the manner in which Nichia applies particular claim elements to the features and functions of Defendants' accused technology (if at all). In certain circumstances, the citations are intended to demonstrate and provide notice that, if certain claim elements are applied against the prior art in the same manner as Nichia appears to have applied them in its Infringement Contentions, then certain prior art discloses those claim elements to the same extent. The prior art references may alternatively or also disclose the same claim element if the claim elements are applied differently than in Nichia's Infringement Contentions.

Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and description of the figure and any text relating to the figure. Where Defendants cite to particular text referring to a figure, the citation should be understood to include the figure as well. Defendants further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony to establish bases for combinations of certain prior art references that render the asserted claims obvious. Further, for

any combination, Defendants reserve the right to rely additionally on information generally known to those skilled in the art and/or common sense.

Where an individual reference is cited with respect to all aspects of an Asserted Claim, Defendants contend that the reference anticipates the claim under 35 U.S.C. §§ 102 (a), (b), (e), and/or (g) and also renders obvious the claim under 35 U.S.C. § 103, both by itself in view of the knowledge of a person of ordinary skill in the art. Where an individual reference is cited with respect to fewer than all elements of an Asserted Claim or is not found to disclose one or more elements of an Asserted Claim, Defendants contend that the reference renders obvious the claim under 35 U.S.C. § 103 (a) in view of each other reference and combination of references that discloses the remaining claim element(s), as indicated in the claim charts submitted herewith. Exemplar motivations to combine references are discussed below.

Defendants further reserve the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event that Defendants obtain evidence that the named inventors of the '631 Patent did not invent (either alone or in conjunction with others) the subject matter of the Asserted Claims. Should Defendants obtain such evidence, Defendants will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived. Defendants further intends to rely on inventor admissions regarding the scope of the Asserted Claims or of the prior art relevant to the Asserted Claims found in *inter alia*: the patent prosecution history for the '631 Patent and related patents and/or patent applications; any deposition testimony of any of the named inventors of the '631 Patent; and the papers that Nichia files and any evidence that it submits in conjunction with this litigation, any related litigation, or proceedings before the United States Patent and Trademark Office. To the extent any information is identified under § 102 (f), Defendants reserves the right to contend that the '631

Patent are invalid for failure to name the correct inventorship, and/or to contend that Nichia lacks standing to bring this case with respect to the '631 Patent.

Defendants also may rely upon the disclosures of the references cited and/or discussed during the prosecution of the '631 Patent or any post-grant proceedings involving the '631 Patent, and/or the assertions presented regarding any such references. Defendants may also rely upon the disclosures, and express or implicit admissions, in the '631 Patent as to features and functionality that were known in the prior art as well as any disclosures incorporated by reference to the '631 Patent. Defendants may rely on additional citations, references, expert testimony, and other material to provide context or to aid in understanding the cited portions of the references, inherent disclosures, and/or cited features of the prior art systems. Defendants also may rely on expert testimony explaining relevant portions of references, inherent disclosures, relevant hardware or software products or systems, and other discovery regarding these subject matters.

For all of the reasons stated above and herein, Defendants reserves the right to supplement these Invalidity Contentions, including the charts submitted herewith, as appropriate.

Each prior art reference identified in the Prior Art Invalidity Charts in **Exhibits 631-1 to 631-4** may be combined with the other prior art references therein to render obvious the Asserted Claims in combination. A prior art reference's disclosures may also be combined with information known to persons skilled in the art at the time of the alleged invention, and understood and supplemented in view of the common sense of persons skilled in the art at the time of the alleged invention. In addition to the anticipatory references described in these Invalidity Contentions, the '631 Patent is invalid based on obviousness.

In general, a claimed invention is unpatentable if the differences between it 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.” 35 U.S.C. § 103(a); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966). Each prior art reference identified above and described in Defendant’s prior art charts, either alone or in combination with other prior art, also renders the Asserted Claims invalid as obvious. In particular, each prior art reference may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) any of the other anticipatory prior art references, and/or (3) any of the additional prior art identified above and in the charts attached hereto.

C. Motivation to Combine

Specific combinations of prior art, by way of example, are provided below. In addition, Defendant incorporates by reference each and every prior art reference of record in the prosecution of the '631 Patent and related applications (including any IPRs or post-grant proceedings), including the statements made therein by the applicant, as well as the prior art discussed in the specification.

In view of the Supreme Court’s *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1739 (2007) (“KSR”) decision, the USPTO issued a set of Examination Guidelines. See *Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57,526 (Oct. 10, 2007). Those Guidelines summarized the KSR decision, and identified various rationales for finding a claim obvious, including those based on other precedents. Those rationales include:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;

- Use of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art;
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Id. at 57, 529. Defendants contend that one or more of these rationales apply in considering the obviousness of the Asserted Claims. As discussed in more detail below and as demonstrated in the appended claim charts, tool industry was actively pursuing a number of well-developed solutions in connection with the standardization processes relating to the subject matter of the '631 Patent.

A teaching, suggestion, or motivation to combine references is no longer required under *KSR Int'l, Inc. v. Teleflex Co.* Nevertheless, a person of skill in the art would have been motivated to combine each of the above-identified references with the others identified with respect to the '631 Patent. Defendants contend that one of ordinary skill in the art, at the time the alleged inventions of the Asserted Claims were made, would have been motivated to

combine the references disclosed herein in such a way to reach the alleged inventions. The teaching, suggestion, or motivation to combine these references, although not required, is found, explicitly or implicitly in one or more of at least the following:

- the knowledge or common sense of one of ordinary skill in the art;
- the prior art references themselves and/or the prior art as a whole, including interrelated teachings of multiple prior art references;
- the common fields of technology of the references; the subject matter acknowledged as prior art in the '631 Patent;
- the nature of the problem to be solved and the existence of similar improvements in similar applications; design incentives and other market forces, including the advantages of creating a superior and more desirable product and the effects of demands known to the design community or present in the marketplace;
- the ability to implement the alleged invention as a predictable variation of the prior art;
- improvements in similar devices; any needs or problems known in the fields addressed by the '631 Patent; the teachings in the references directed to solving the problems that the '631 Patent was allegedly directed to solving;
- and the number of identified, predictable solutions to the problems addressed by these patents. In addition, the simultaneous (and/or prior) inventions described above (and elsewhere in these contentions) are evidence that motivation to combine the concepts described in the various prior art references did, in fact, exist, and they were in fact, combined.

These references and inventions identify and address many of the same technical issues and suggest similar solutions to those issues. Moreover, many of these references and inventions cross-reference and discuss one another, further illustrating the close technical relationship among this group of references and inventions. Accordingly, the teachings of the individual prior art references and inventions, combined with the industry knowledge of a person of ordinary skill in the art at the time of the alleged invention of the '631 Patent would render obvious the Asserted Claims for at least the reasons described below and in the incorporated exhibits. A person of ordinary skill at the time of the alleged inventions had reason to combine or modify one or more of the references listed and charted in Defendants' prior art charts in light of the knowledge of a person of ordinary skill in the art at the time of the invention and information in the prior art cited herein. In particular, and without limitation, a person of ordinary skill at the time of the invention would have been motivated to combine or modify one or more of the references charted and listed herein because these references are directed to a common field of endeavor and to solving a common problem, namely, the generation of light using light-emitting diode devices. Thus, these references would logically have been combined pursuant to 35 U.S.C. § 103, and there was abundant motivation to combine such references at the time of the purported inventions of the '631 Patent.

D. Invalidity Under 35 U.S.C. § 112

Defendants contend that the asserted claims of the '631 Patent are invalid under 35 U.S.C. § 112 for lack of written description, lack of enablement, and indefiniteness. Defendants reserve the right to supplement these disclosures based on further investigation and discovery.

1. Lack of Written Description

Defendants contend that all the asserted claims of the '631 Patent are invalid for failure to comply with the written description requirements under 35 U.S.C. § 112 ¶ 1. The written description, drawings, and claims in a patent must clearly allow a person of ordinary skill in the art to understand and recognize that the patentee invented what is claimed. *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479 (Fed. Cir. 1998). In this regard, the patent must demonstrate by disclosure in the specification to those skilled in the art that the patentee had “possession” of what is now asserted to be the claimed invention. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The written description must actually or inherently disclose every claim element. *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306-07 (Fed. Cir. 2008). It is not enough to say that undisclosed subject matter would have been obvious or within the normal skill set of a person of ordinary skill. *ICU Medical, Inc. v. Alaris Medical Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009). A written description that discloses only a certain method does not “necessarily support a broad claim as to every possible type of [method], no matter how different in structure or operation from the inventor’s [discussion].” *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1346 (Fed. Cir. 2005). That is, an inventor’s description of one type of method does not entitle the inventor to claim “any and all means for achieving that objective.” *Id.*; see also *ICU Medical*, 558 F.3d at 1377–79.

For the avoidance of any doubt, where Defendants identify a claim term in an independent claim, Defendants further contend any asserted dependent claim is invalid based on the presence of the same term in the asserted dependent claim.

Given the disclosure in the specification, and as Defendants understand Nichia's claim interpretations, the following claim limitations lack adequate written description and are thus invalid:

Claim 1

- “a phosphor contained in said transparent material and absorbing a part of light emitted by said LED chip and emitting light of wavelength different from that of the absorbed light”
- “a concentration of said phosphor in the vicinity of said LED chip is larger than a concentration of said phosphor in the vicinity of the surface of said transparent material”
- “said phosphor diffuses the light from said LED chip and suppresses a formation of an emission pattern by a partial blocking of the light by said electrode”

Claim 3

- “said phosphor emits light having a spectrum with a peak in the range from 510 to 600 nm and a tail continuing beyond 700 nm”
- “said spectrum of the light emitted from said phosphor and said spectrum of the light emitted from said LED chip overlap with each other to make a continuous combined spectrum”

Claim 4

- “said spectrum of the light emitted from said phosphor has a peak in the range from 530 to 570 nm and a tail continuing beyond 700 nm”

Claim 6

- “said phosphor comprises two or more kinds of fluorescent materials”

Claim 7

- “said phosphor comprises an yttrium-aluminum-garnet fluorescent material containing Y and Al”

Claim 8

- “crystal structure”

Claim 11

- “said transparent material is selected from the group consisting of epoxy resin, urea resin, silicone resin and glass”

2. Lack of Enablement

Defendants contend that all the asserted claims of the '631 Patent are invalid for failure to comply with the enablement requirements under 35 U.S.C. § 112 ¶ 1. The patent specification must teach those of ordinary skill in the art to make and use the invention without undue experimentation in order to satisfy the enablement requirement. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Detailed procedures are not necessarily required, but the description of the invention itself must be sufficient to permit those skilled in the art to make and use the invention. *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1373 (Fed. Cir. 2005).

For the avoidance of any doubt, where Defendants identify a claim term in an independent claim, Defendants further contend any asserted dependent claim is invalid based on the presence of the same term in the asserted dependent claim.

Given the disclosure in the specification, and as Defendants understand Nichia's claim interpretations, the following claim limitations are not enabled and are thus invalid:

Claim 1

- “a phosphor contained in said transparent material and absorbing a part of light emitted by said LED chip and emitting light of wavelength different from that of the absorbed light”
- “a concentration of said phosphor in the vicinity of said LED chip is larger than a concentration of said phosphor in the vicinity of the surface of said transparent material”
- “said phosphor diffuses the light from said LED chip and suppresses a formation of an emission pattern by a partial blocking of the light by said electrode”

Claim 3

- “said phosphor emits light having a spectrum with a peak in the range from 510 to 600 nm and a tail continuing beyond 700 nm”
- “said spectrum of the light emitted from said phosphor and said spectrum of the light emitted from said LED chip overlap with each other to make a continuous combined spectrum”

Claim 4

- “said spectrum of the light emitted from said phosphor has a peak in the range from 530 to 570 nm and a tail continuing beyond 700 nm”

Claim 6

- “said phosphor comprises two or more kinds of fluorescent materials”

Claim 7

- “said phosphor comprises an yttrium-aluminum-garnet fluorescent material containing Y and Al”

Claim 8

- “crystal structure”

Claim 11

- “said transparent material is selected from the group consisting of epoxy resin, urea resin, silicone resin and glass”

3. Indefiniteness

Defendants contend that all the asserted claims of the '631 Patent are invalid as indefinite under 35 U.S.C. § 112 ¶ 2. “[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

For the avoidance of any doubt, where Defendants identify a claim term in an independent claim, Defendants further contend any asserted dependent claim is invalid based on the presence of the same term in the asserted dependent claim.

Given the disclosure in the specification, and as Defendants understand Nichia’s claim interpretations, the following claim limitations are indefinite and are thus invalid:

Claim 1

- “a phosphor contained in said transparent material and absorbing a part of light emitted by said LED chip and emitting light of wavelength different from that of the absorbed light”
- “a concentration of said phosphor in the vicinity of said LED chip is larger than a concentration of said phosphor in the vicinity of the surface of said transparent material”

- “said phosphor diffuses the light from said LED chip and suppresses a formation of an emission pattern by a partial blocking of the light by said electrode”

Claim 3

- “said phosphor emits light having a spectrum with a peak in the range from 510 to 600 nm and a tail continuing beyond 700 nm”
- “said spectrum of the light emitted from said phosphor and said spectrum of the light emitted from said LED chip overlap with each other to make a continuous combined spectrum”

Claim 4

- “said spectrum of the light emitted from said phosphor has a peak in the range from 530 to 570 mm and a tail continuing beyond 700 nm”

Claim 6

- “said phosphor comprises two or more kinds of fluorescent materials”

Claim 7

- “said phosphor comprises an yttrium-aluminum-garnet fluorescent material containing Y and Al”

Claim 8

- “crystal structure”

Claim 11

- “said transparent material is selected from the group consisting of epoxy resin, urea resin, silicone resin and glass”

Claim 12

- “crystal structure”

Claim 13

- “said phosphor diffuses said light emitted from said LED chip”

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Respectfully submitted,

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CERTIFICATE OF SERVICE

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