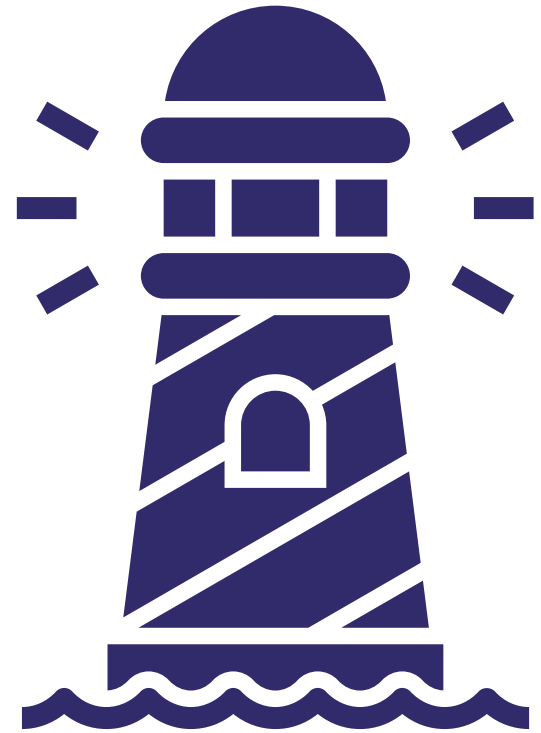


B · R · Y · T · N

회사 소개자료

2021.11.18



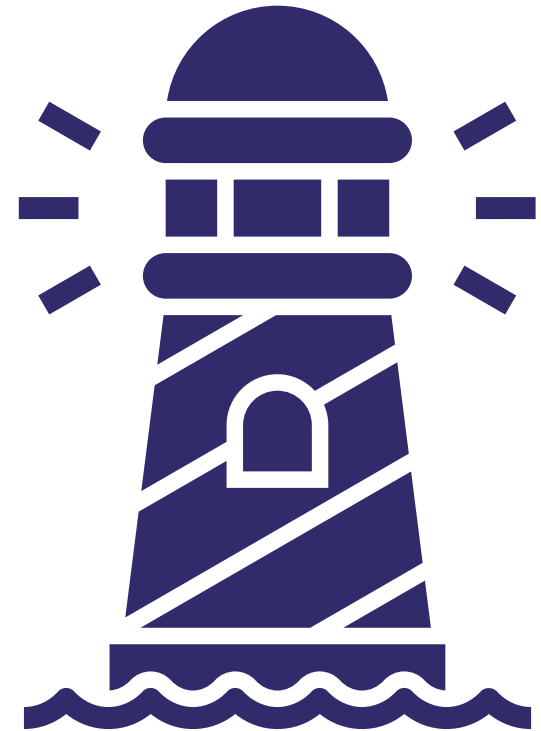
BRYTN

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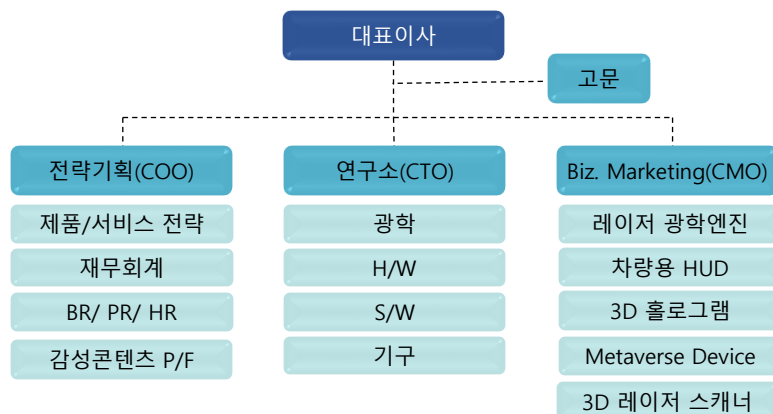


BRYTN

BRYTN은 SK telecom의 레이저 광학기술과 Asset을 기반으로 Spin-off 하여 다양한 산업영역에 적용이 가능한 레이저 광학 사업을 본격 추진하며 궁극적으로 3D Hologram 영역의 Global Top Player를 목표로 합니다.

BRYTN 개요

회사명	㈜ 브라이튼코퍼레이션
대표이사	유 재 황
설립일	2020년 3월 11일
자본금	2억원
주요사업	광학엔진 및 광학제품 개발/판매사업
본사	경기도 성남시 분당구 새나리로25, 창업보육센터 202, 203호 (야탑동, 전자기술연구원)
구성원 수	10명
핵심기술	레이저광학설계, Speckle Noise 저감기술, Eye-Safety 확보기술
응용제품	차량용 AR-HUD, 3D 홀로그램, Metaverse Device(AR/VR)용 광학엔진, 의료용 3D 레이저 스캐너 엔진, 레이저 피코프로젝터 등



경영진

CEO



대표이사 유 재 황 (James YU)

- 학력 : KAIST 전기전자공학 박사
- 경력 : SK telecom (1993~2020)
 - 2013.3~2020 : Laser 광학기술개발 총괄
 - 2003~2013 : N/W Eng.기술 및 차세대기술개발 팀장 (2006년, 마이크로프로젝터 개발)
 - 1993~2002 : Access망(기지국, 단말기)기술 개발
 - 1988~1993 : RFIC, MMIC, ISM-Band CDMA 단말기 개발

COO



VP KUIK CHUNG

CTO



VP MAX KWON

CMO



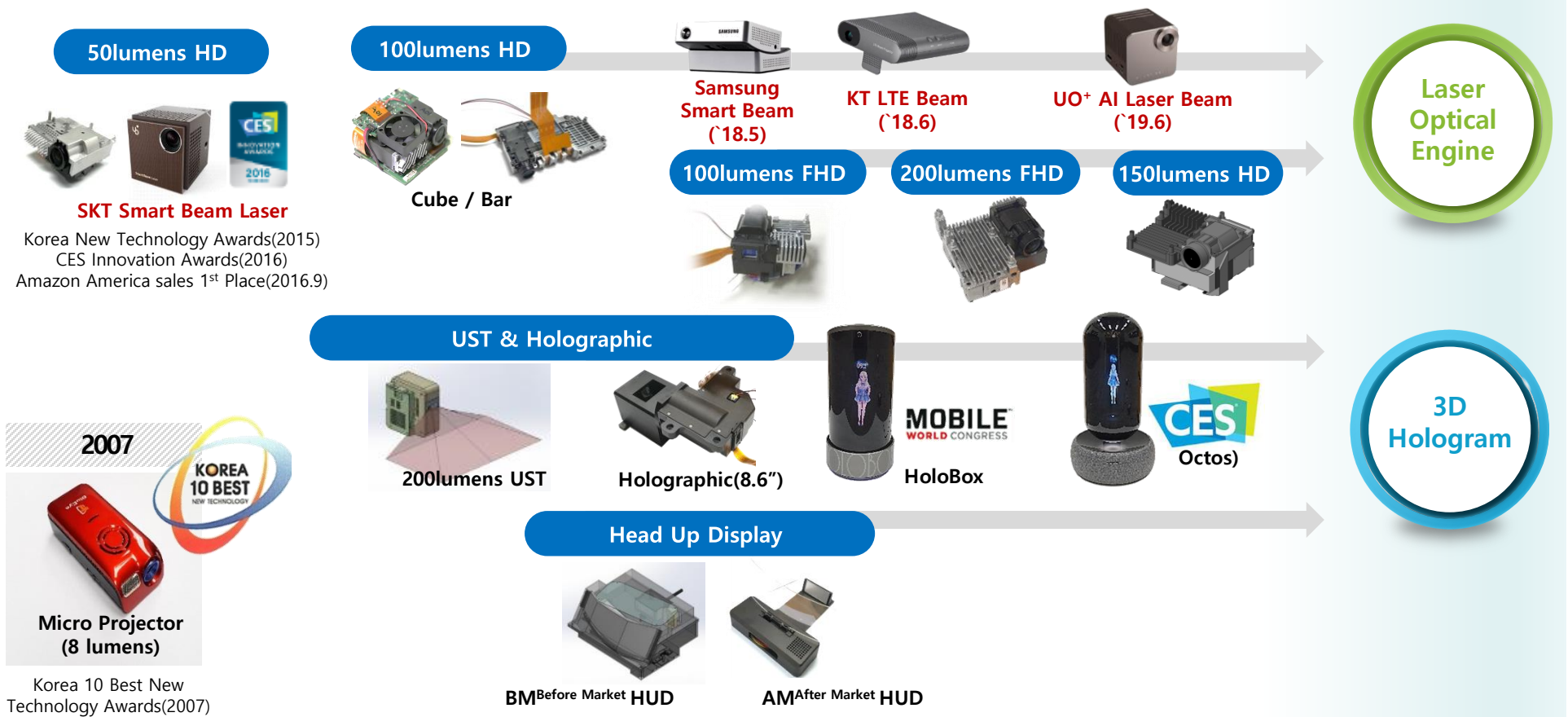
VP JOSEPH CHOI

BRYTN is a spin-off company that owns SK telecom's laser technology and related all assets

SK telecom Optics Project

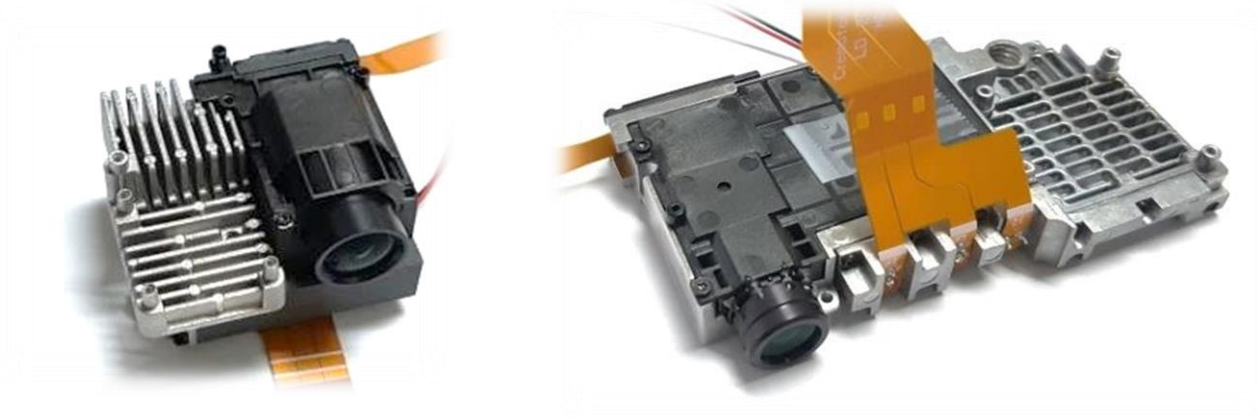
BRYTN

2015 2016 2017 2018 2019 2020



Pico optical engine is a **projection engine** that meets the following conditions

- Brightness : ~50 lumens, 50~100 lumens, and ~200 lumens
- Volume & Size : Can be embedded into many devices
- Power Consumption : Enough to operate with battery



BRYTN has a superior pico optical engine compared to other properties in brightness and resolution, focus-free, eye-safety

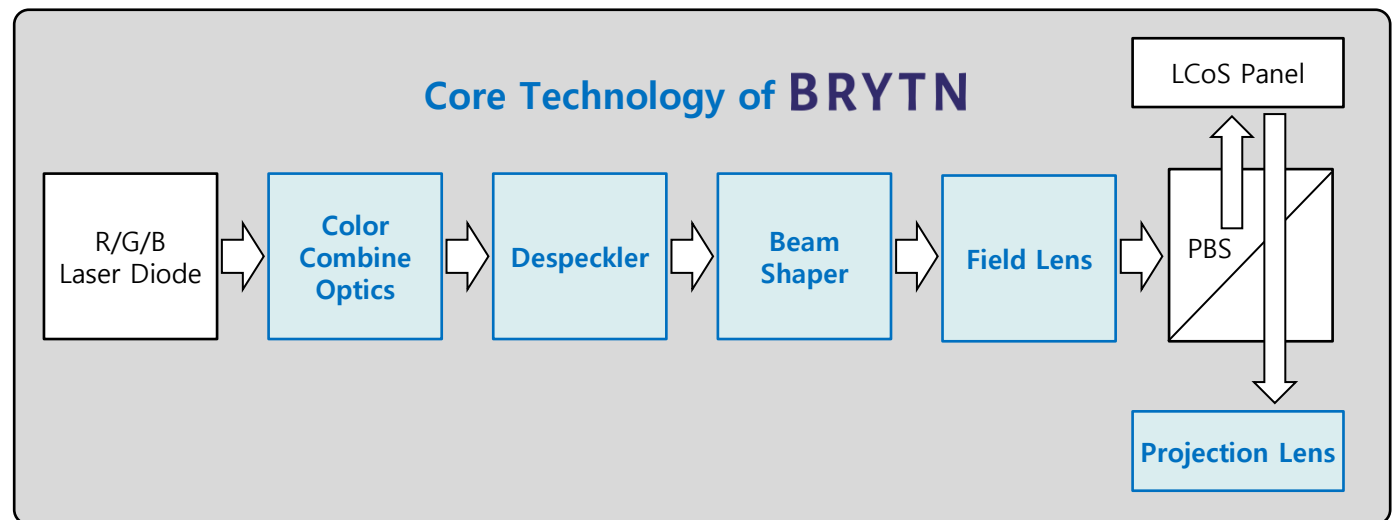
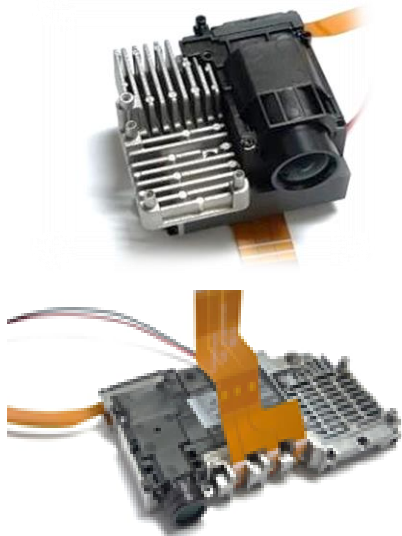
Technology	Optical Engine	Product Sales		Performance
		Pico Projector	Embedded Module	
DLP (LED)				<ul style="list-style-type: none"> • HD Resolution • ~80 lumens Brightness • Manual Focus
LCoS (LD)				<ul style="list-style-type: none"> • ~FHD Resolution • ~200 lumens Brightness • Focus-free with Laser Eye-safety Class 1
Laser Scan (LD)				<ul style="list-style-type: none"> • FHD Resolution • 40 lumens Brightness • Focus-free with Laser Eye-safety Class 3 (Fade-out)

Technology-proven laser optical engine will expand its business area through full-scale marketing and mass production in 2021

TI社 대비* 차별화된 세계 최고 성능의 초소형(Pico급) Laser Optical Engine

- HD/FHD 해상도, 50~200루멘의 밝기
- Focus-free Projection
- Laser Eye-Safety Class 1 확보기술과 Speckle 저감 기술
- Battery로 동작가능한 소모전력으로 Portable Device 탑재 가능
- 초소형 Laser 광학엔진관련 원천특허 보유

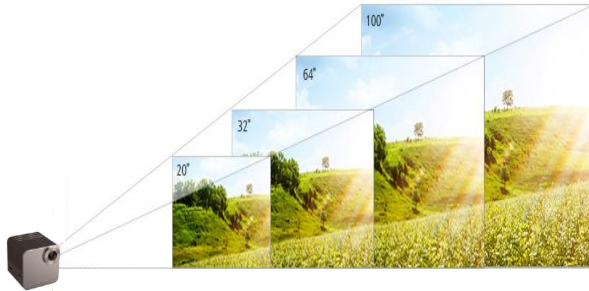
* 현재 시장지배적 사업자인 TI社의 DLP를 적용한 광학엔진은 LED 광원 사용



※ PBS : Polarization Beam Splitter
※ LCoS : Liquid Crystal on Silicon

Focus-free

- Provides Focus-free feature because of the R/G/B laser light source



Brightness

- Provides screen over 100 lumens brightness with small optical engine size



Laser Eye-safety

- World's only Eye-safety Class 1 Laser Beam Projector Engine with Focus-free and 200lumens Brightness



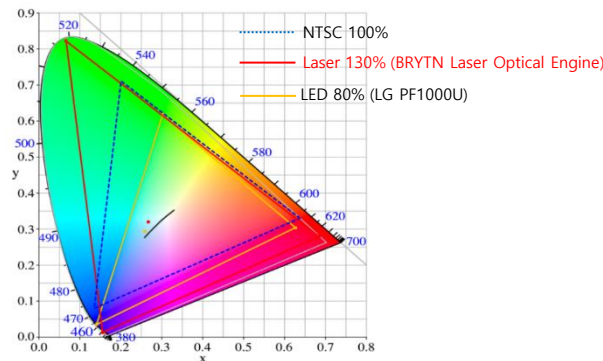
Resolution

- Provides excellent image quality with high resolution of WXGA (1366X768), up to FHD(1920X1080)



Color Gamut

- Laser light source provides excellent color performance compared to LED light source



Power Efficiency

- Laser has excellent power efficiency so it consumes less power at the same brightness

	Power (W)	Efficacy (lm/w)
RGB LED †	6.0	10.6
B Laser+Phosphor †	8.3	8.1
RGB Laser †	3.9	16.3

† Measured data, † Modeled data

Source: Greg Pettitt et al., "Practical Application of TI DLP® Technology", SID 2015 DIGEST

Portfolio & Roadmap



Projector STB/OTT Box Holographic Helmet Dental Scanner HUD

- Pico Projector
- UST Projector

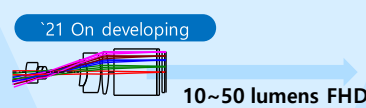
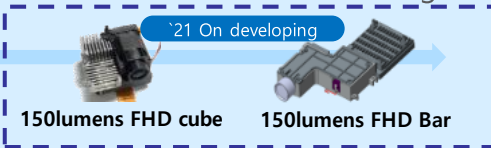
- IPTV STB
- OTT Box

- HoloBox™
- 3D Hologram

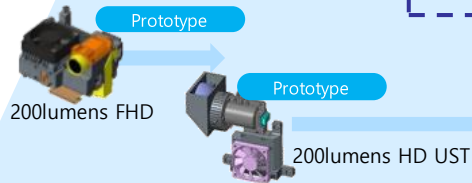
- Welding Helmet
- Special HMD

- Dental Scanner
- AOI Scanner

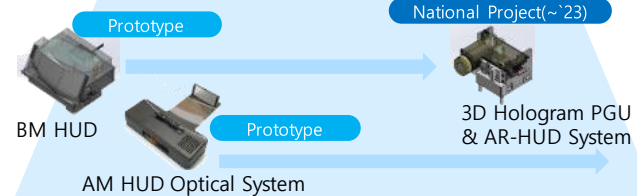
- AR HUD
- Holographic HUD



Low Power Optical Engine



National Project(~'22)

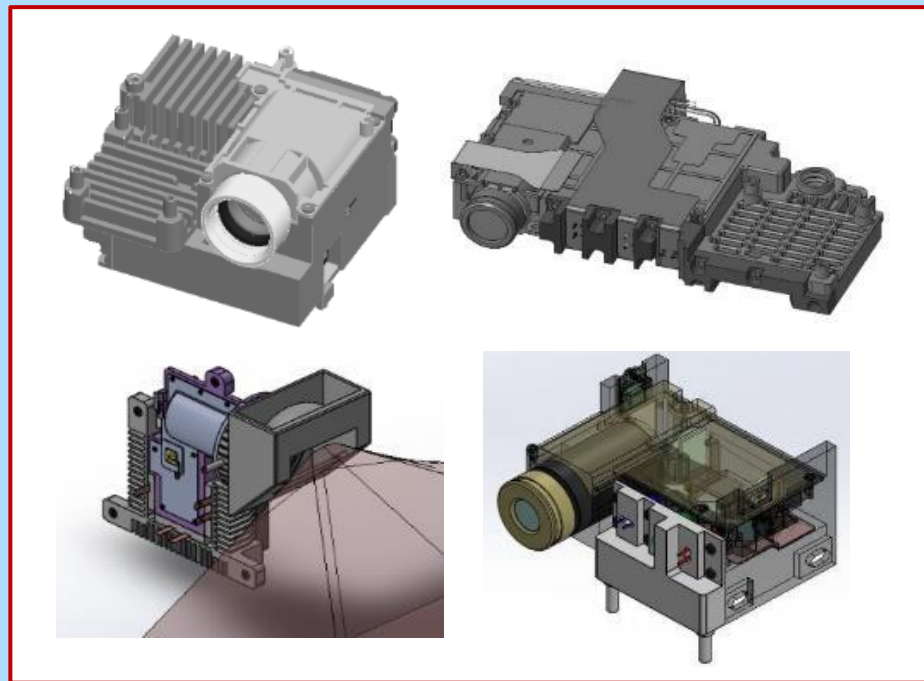


3D Hologram Optical Engine

Laser Pico/UST Optical Engine

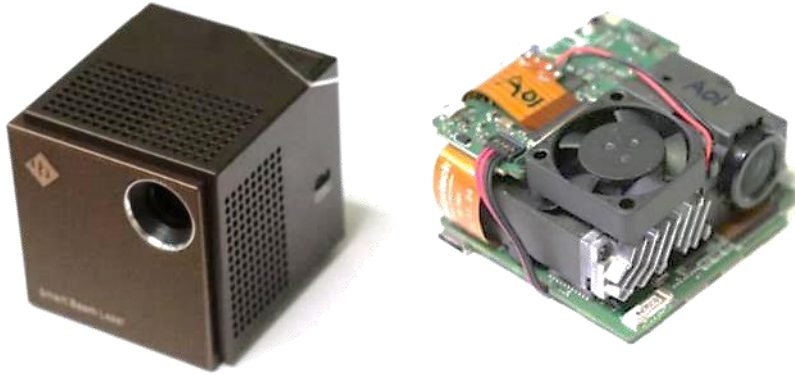
Global No.1 Laser Optical Engine Company with Innovation

Premium Laser Optical Engine



Smart Beam Laser

Commercialized



Amazon Most Wished For
Our products most often added to Wishlists and Registries. Updated daily.

Any Department
Electronics
Camera & Photo
Projectors
Slide Projectors
Video Projectors

Most Wished For in Video Projectors

- UO Smart Beam Laser, Focus Free, No N...
★★★★☆ (48)
\$345.00
13 used & new from \$170.00
- RIF6 Cube 2-inch Mobile Projector w/...
★★★★☆ (658)
\$288.07
14 used & new from \$260.00
- WhaleStone WS80 Portable LED Home The...
★★★★☆ (183)
\$89.99
4 used & new from \$76.49



Pico Projector News, Resources & Information
Pico-Projector Info is the web's leading resource on Pico Projectors. These projectors are small enough to be embedded in mobile phones and other devices, and are becoming more and more popular. Our site brings you daily news, projector resources, a buying guide and more!

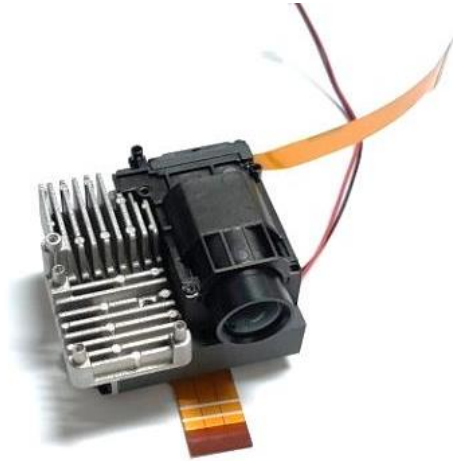
Best selling pico-projector update (September 2016)
Here's our monthly best-selling pico-projectors list for the beginning of September 2016. We're using data from Amazon.com, which seems to be selling the most wide range of pico projectors. This list does not include embedded modules in mobile phones or cameras.

1. UO Smart Beam Laser (\$345)
 2. RIF6 CUBE DLP Pico (\$290)
 3. Aaxa P1 (\$103)
 4. Sony MPCL1 (\$349)
 5. Mileagea Pico DLP (\$269)
 6. Amaz-Play Black-Silver Mobile Pico Projector (\$279)
 7. Aaxa P300 (\$369)
 8. Celluon PicoPre (\$353)
 9. Magnasonic LED Pocket Pico Video Projector (\$169)
 10. SK UO Smart Beam (\$135)
- Sep 01, 2016

Specification			
Resolution	HD (1280x720)	Brightness	50 Lumens (Typical)
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	100%	Throw ratio	1.4
Focusing	Focus-free	Projection Image Size	16" ~ 96"
Contrast Ratio	> 500:1	Optical Engine Size (DxWxH)	50.5 x 48 x 20mm ³

Cube Type

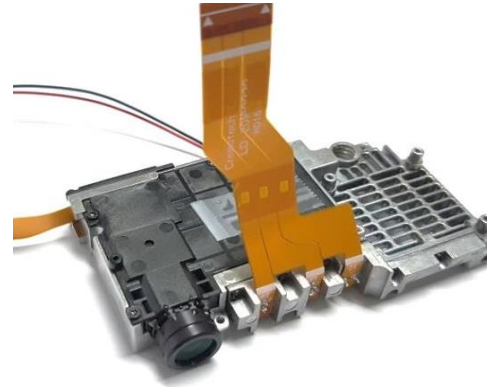
Now Available
Commercialized



Wonderful Platform
AI Laser Beam(^19.6.30)

Bar Type

Commercialized



Samsung Smart Beam(^18.5.21)



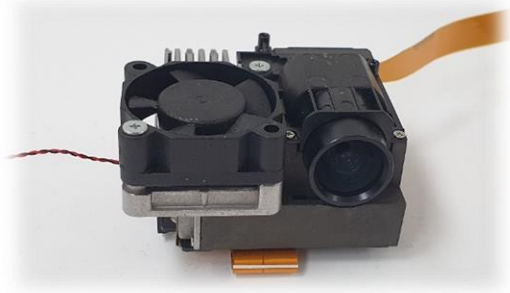
KT LTE Beam Projector(^18.6.11)

Specification			
Resolution	WXGA (1366x768)	Brightness	100 Lumens(Typical)
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	100%	Throw ratio	1.30
Focusing	Focus-free	Projection Image Size	20" ~ 100"
Contrast Ratio	> 500:1		
Power Efficiency	8W Laser Power, 0.2W Panel @ Optical Engine, 100 Lumens		
Optical Engine Size (DxWxH)	50.5 x 49.5 x 30 mm ³	Weight	81g

Specification			
Resolution	WXGA (1366x768)	Brightness	100 Lumens(Typical)
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	0%	Throw ratio	1.35
Focusing	Focus-free	Projection Image Size	20" ~ 100"
Contrast Ratio	> 500:1		
Power Efficiency	8W Laser Power, 0.2W Panel @ Optical Engine, 100 Lumens		
Optical Engine Size (DxWxH)	44.1 x 85 x 13.5 mm ³	Weight	56g

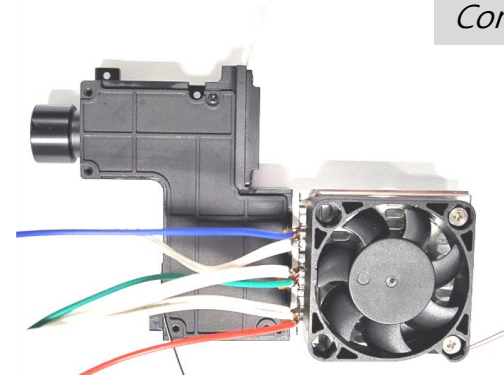
Cube Type

Now Available
Commercialized



Bar Type

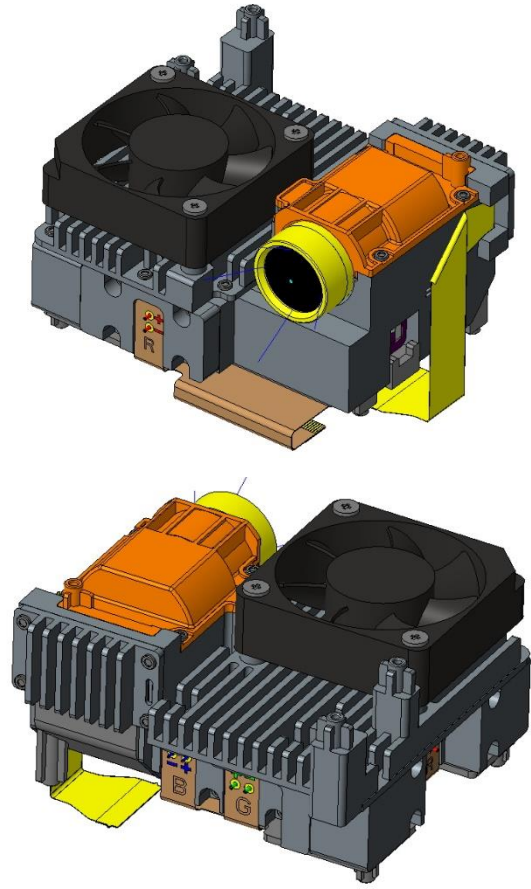
Commercialized



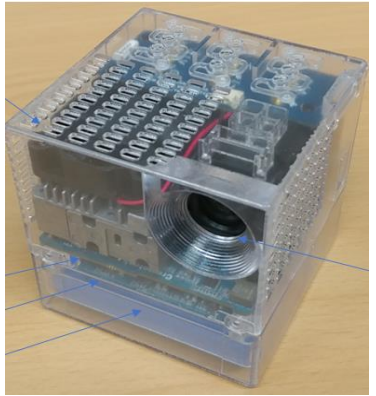
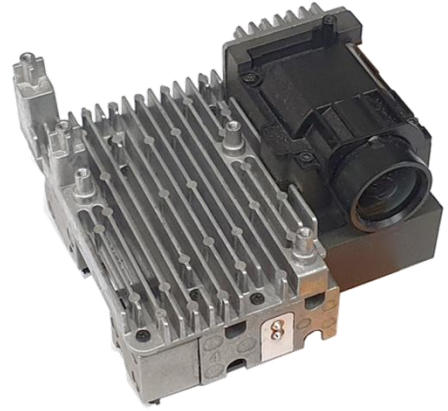
Specification			
Resolution	Full HD (1920x1080)	Brightness	≥ 130 lm (Max 150lm) Lumens
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	100%	Throw ratio	1.30
Focusing	Focus-free	Projection Image Size	20" ~ 80"
Contrast Ratio	> 500:1		
Power Efficiency	9W Laser Power, 0.2W Panel @ Optical Engine/130 Lumens		
Optical Engine Size (DxWxH)	65 x 49 x 30 mm ³	Weight	76g

Specification			
Resolution	Full HD (1920x1080)	Brightness	≥ 130 lm (Max 150lm) Lumens
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	0%	Throw ratio	1.35
Focusing	Focus-free	Projection Image Size	20" ~ 80"
Contrast Ratio	> 500:1		
Power Efficiency	9W Laser Power, 0.2W Panel @ Optical Engine/130 Lumens		
Optical Engine Size (DxWxH)	111.5 x 72.2 x 16 mm ³	Weight	TBD

200lumens FHD Laser Optical Engine



Prototype

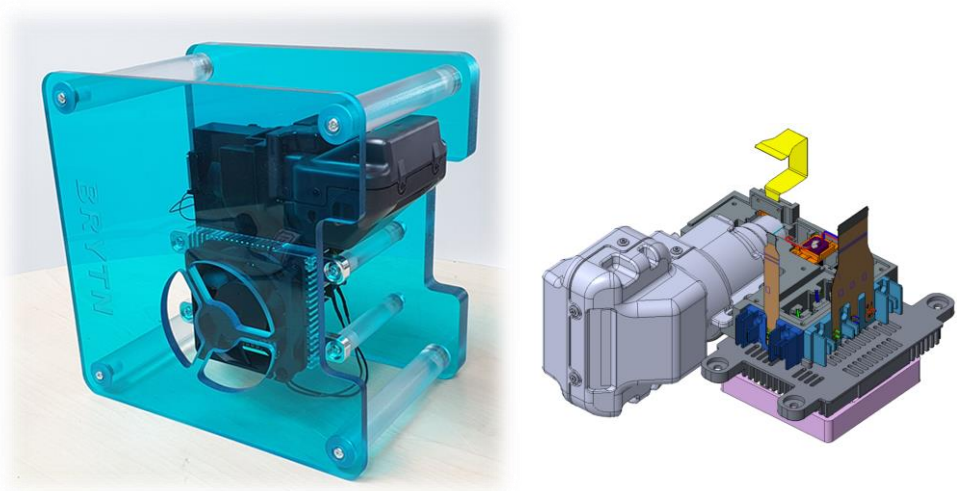


Specification

Resolution	FHD (1920x1080)	Brightness	≥ 180 lm (Max 220lm) Lumens
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	100%	Throw ratio	1.30
Focusing	Focus-free	Projection Image Size	20" ~ 100"
Contrast Ratio	> 500:1		
Power Efficiency	16W Laser Power, 0.2W Panel @ Optical Engine, 200 Lumens		
Optical Engine Size (DxWxH)	66 x 62 x 38 mm ³	Weight	TBD

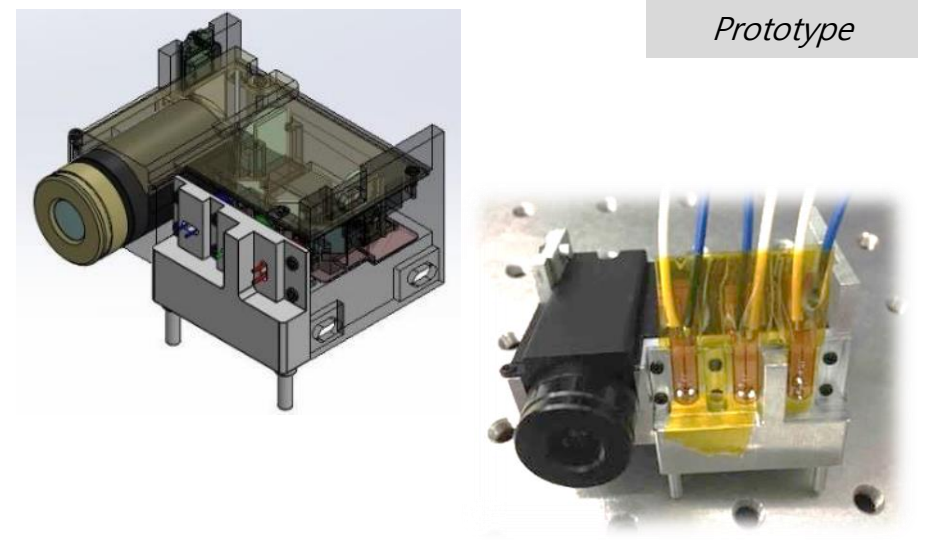
* Now we are changing to HD resolution for mass production

UST(Ultra Short Throw)



Specification			
Resolution	WXGA (1366x768)	Brightness	180 Lumens
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Offset	110%	Throw ratio	0.26
Focusing	(TBD)	Projection Image Size	23" ~ 56"
Contrast Ratio	> 500:1		
Optical Engine Size (DxWxH)	TBD	Weight	TBD

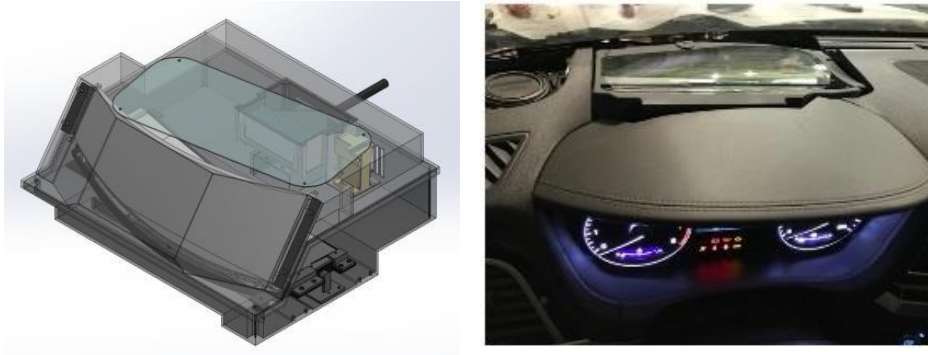
Laser PGU (for HUD)



Specification			
Resolution	1280 x 720	Brightness	50lm~100 Lumens
Panel Type	LCoS (Liquid Crystal on silicon)	Light Source	RGB Laser Diode
Projection Angle	(D) 30°	Contrast Ratio	> 500:1
Optical Engine Size (DxWxH)	TBD	Weight	TBD

Laser HUD (for Beforemarket)

Prototype

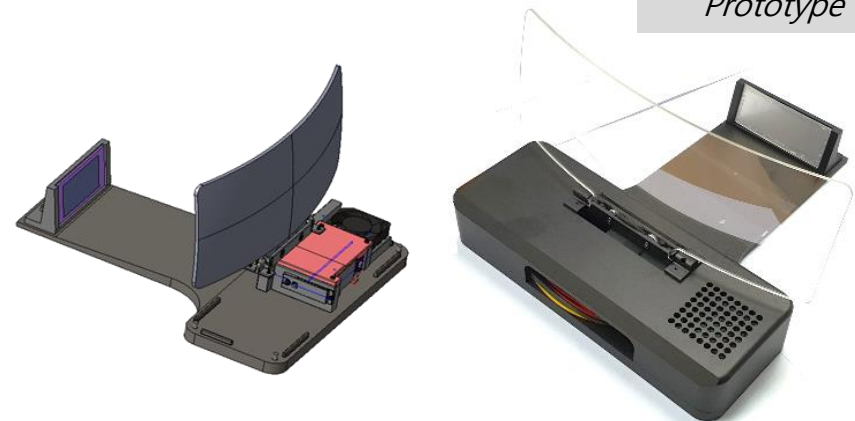


Target Specification

Brightness	> 15,000 nits
Projection Distance (PD)	2.5 ~ 7.5m
Eye-box Size	> 130mm x 40 mm
Look Down Angle	2.5°
FOV (Field of View)	> 10°
Virtual Image Size	> 55"
PGU Type	Laser-LCoS
Unit Volume	<12L

Laser HUD (for Aftermarket)

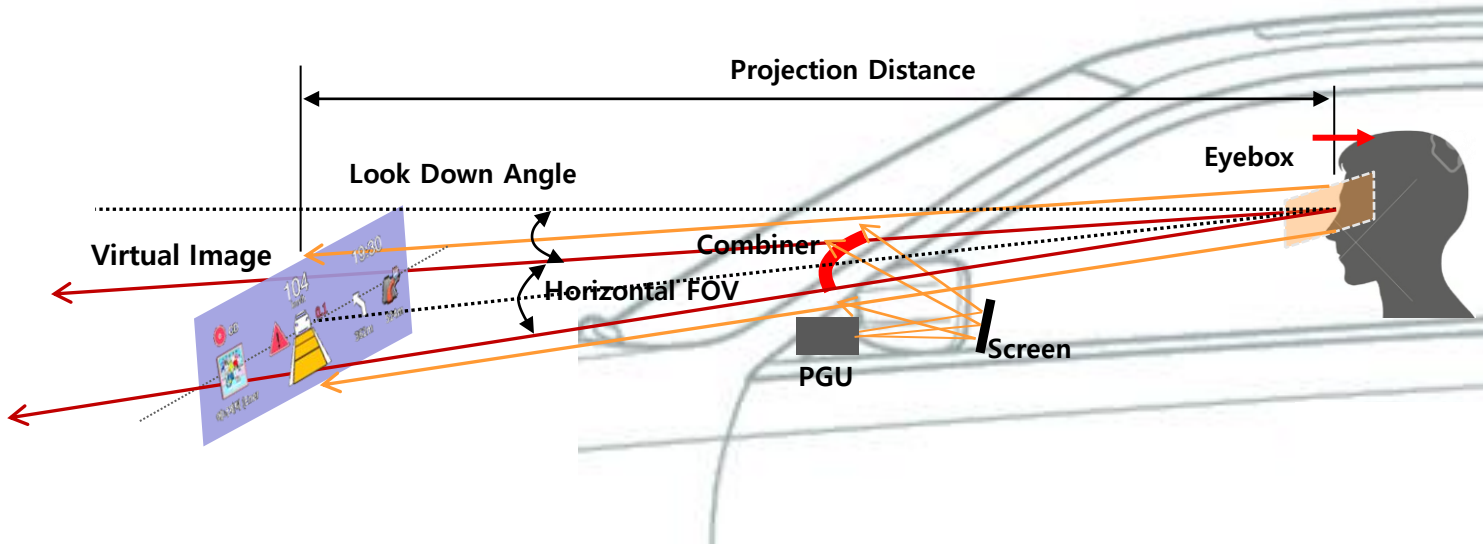
Prototype



Target Specification

Brightness	> 15,000 nits
Projection Distance (PD)	2.5m
Eye-box Size	70mm x 30mm
Look Down Angle	6°
FOV (H) (Field of View)	10.5°
Virtual Image Size	0.46m (Width)
PGU Type	Laser-LCoS
Combiner Width	<200mm

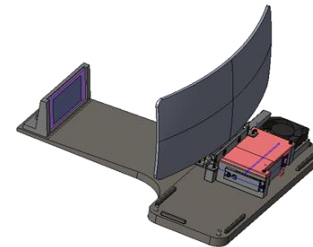
차량의 안전 운행을 지원하기 위하여 운행(속도, 엔진온도, 유량 등) 및 ADAS 정보 및 경쟁력 있는 Navi. System 등과의 연동을 통해 Combiner Type HUD의 활용성을 증대하고 차량내 장착의 편의성을 구현



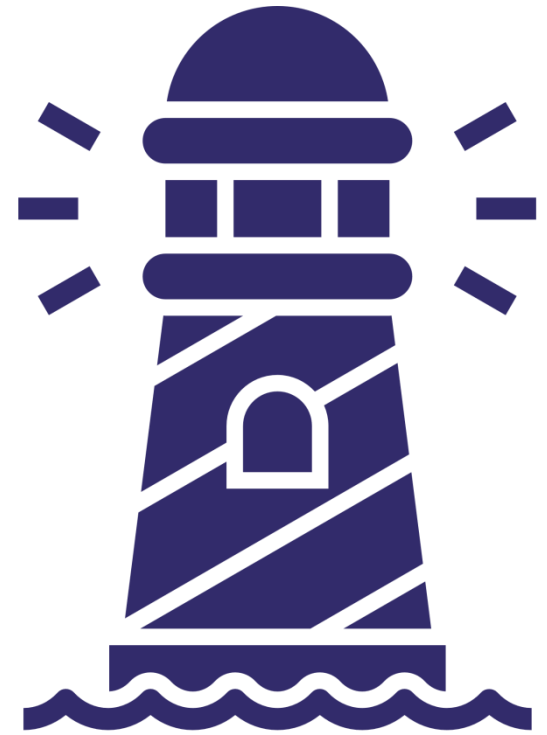
OBD II : Speed, Temp., Fuel, etc.



Smartphone Navi.



Thank You



BRYTN