MCNEX

Ver. Aug 2020

INVISIBLE CORE TECHNOLOGY

MULTIMEDIA CORE OF THE NEXT. **MCNEX**

HERE IS MCNEX AS A LEADER OF CHALLENGE AND INNOVATION, IS MAKING MORE CONVENIENT PROSPEROUS HUMAN LIFE.

Since founded in 2004, MCNEX is a leading manufacturer of global component and material specialized company as developing with 2M camera module and the smallest VGA camera module as well as high pixel auto focusing camera module for mobile and automotive camera and security applications.

As a manufacturer, dreaming of technical innovation by continuous research and development, MCNEX will grow to a global leader of camera module manufacturer which is ranked #1 in Korea, #5 in the world market.

MCNEX is doing its best to take the responsibility in social contribution such as job creation, industrial growth invigoration on the basis of continuous camera module market growth.

In order to be a creative and capable manufacturer which is contributing to the multimedia industry in the 21st century, all MCNEX executives and staffs will not be satisfied but will be their best to make the customer impression.

Please give us your big interests and supports

CEO. DONG UK. MIN

AWARDS

2017 Presidential Prize by President JI Moon

2015 Presidential Prize by President GH Park

2009 Presidential Prize by President MB Lee

2006 Presidential Prize by President MH Noh

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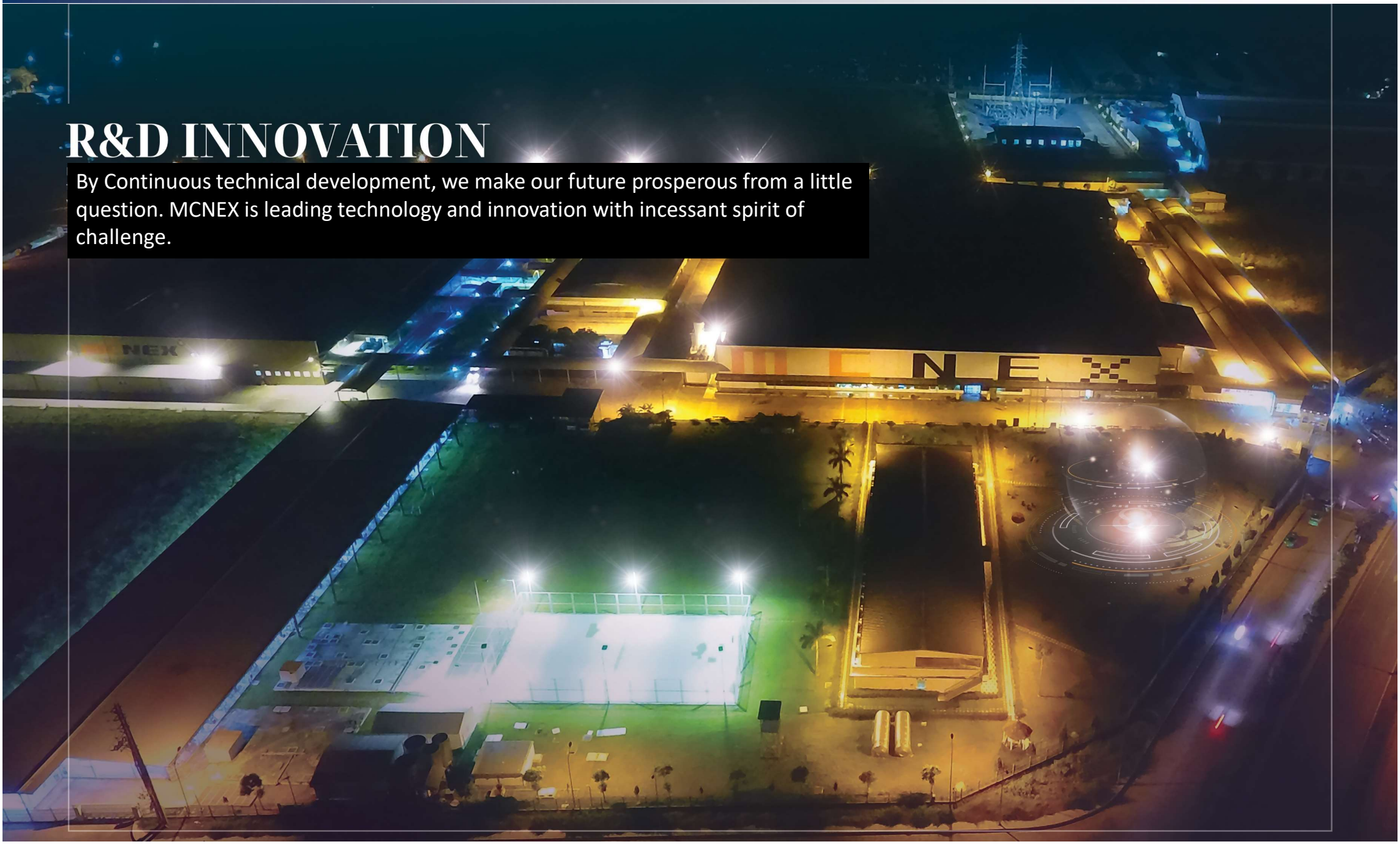
R&D INNOVATION

By Continuous technical development, we make our future prosperous from a little question. MCNEX is leading technology and innovation with incessant spirit of challenge.



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THE EYE OF IT WORLD

CONTINUOUS INNOVATION AND CHALLENGE

MCNEX is growing as a reliable and believable partner of the clients in the world by continuous challenge and technical innovation.
With continuous research and development, MCNEX is becoming the leader in the future industry and contributing to the better human life.
MCNEX, leading the technology and innovation with continuous research and development.

Company	MCNEX
CEO	Dong-Uk MIN
Established	Dec 22nd 2004
HQ	Hanshin IT Tower II, Geumcheon-gu, Seoul, Korea

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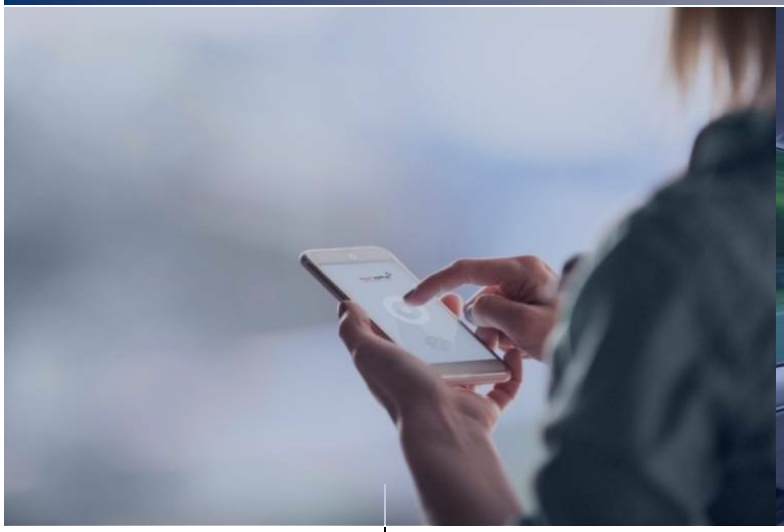
Business field



MOBILE DIVISION

Smartphone Camera
- Single Camera
- Dual Camera
- Triple Camera
- Quad Camera

Biometric Module
- Iris Recognition Module
- Fingerprint Sensing Module
- Face Recognition Module

Lens movement Part
- VCM/ ENCODER / OIS /Folded zoom

AUTOMOTIVE DIVISION

IN-CABIN SYSTEM
- DSM Camera
- Eye-tracking System
- Fingerprint Recognition System
- DVRS (Dashcam) System
- Gesture Camera

OUT-CABIN SYSTEM
- 360˚ AVM Camera
- CMS System
- SRM / BVM System

AUTONOMOUS DRIVING SYSTEM
- MFC / STEREO Camera
- TRI-FOCAL Camera
- MOD Camera

SYSTEM DIVISION

- **ADAS Dashcam**
- **IP Network Camera**
- **SMART Digital Signage (SMART DID)**
- **AR / VR / MR SOLUTION**

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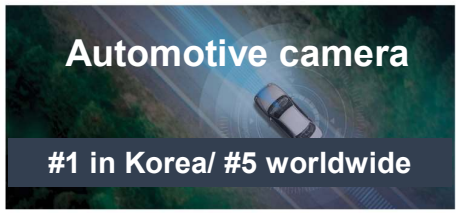
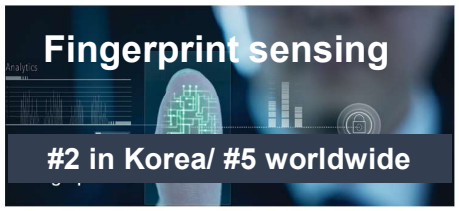
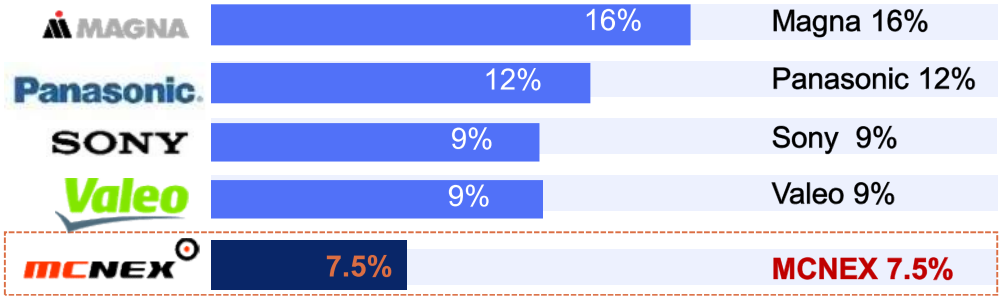
I Market share & Growth status



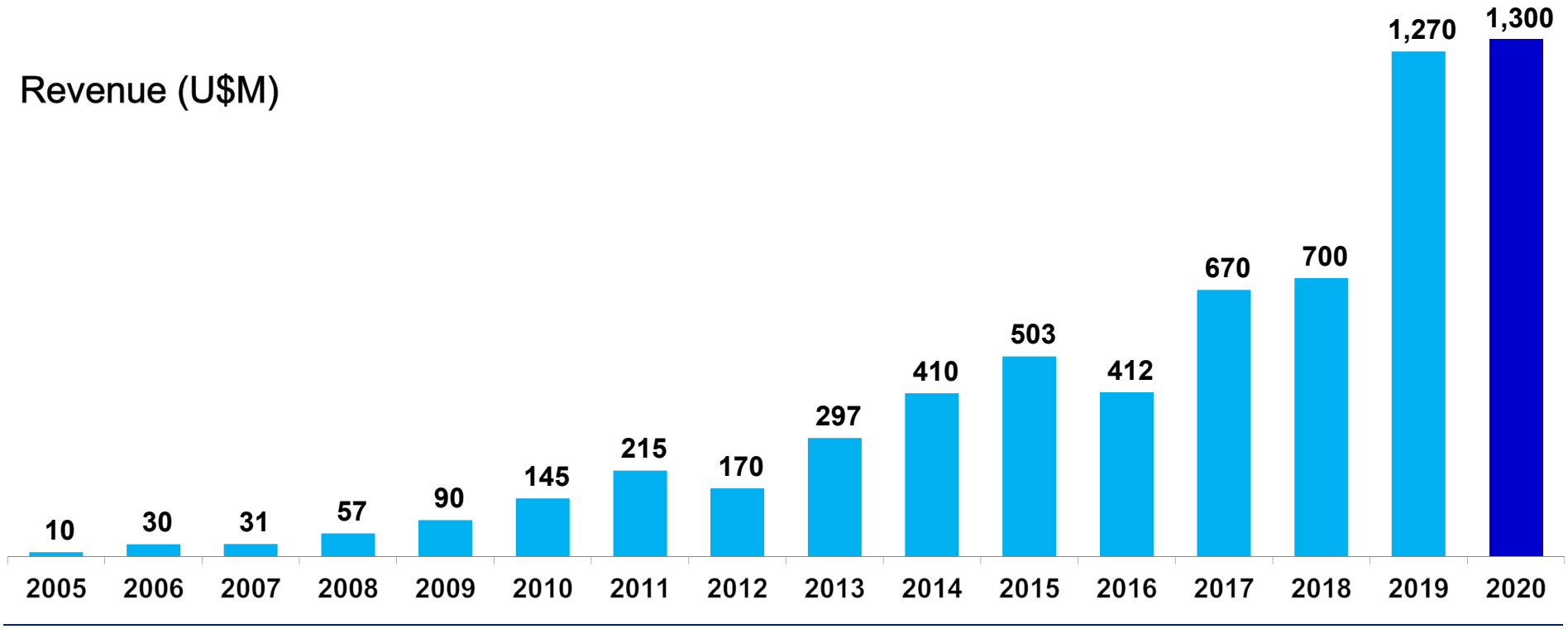


World market share of Automotive camera



Market Analysis by TSR (Feb, 2019)

Revenue (U$M)



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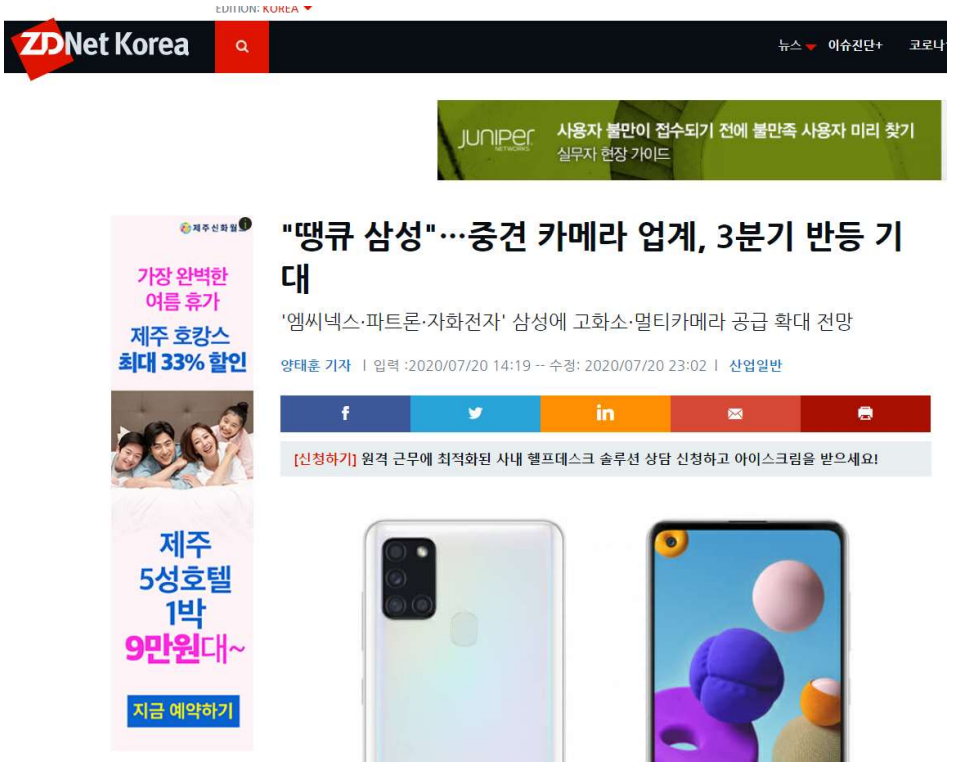
Why MCNEX is growing continuously

Increasing demand of multiple camera (Triple camera/Quadruple camera) & High resolution camera.



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Why MCNEX is growing continuously

Increasing demand of zoom camera (5x Folded zoom).

이데일리 증권

종합 주식 펀드 종목 국제시황 공시정보 시세정보 해외증시 종목정보

속보 | 서울시 "광복절 집회 취소 안 하면 집회금지 명령" 더보기 eNews+

엠씨넥스, 하반기 스마트폰 카메라 시장 확대 '긍정적'-대신

등록 2020-08-03 오전 7:49:28
수정 2020-08-03 오전 7:49:28

유준하 기자

N 기자구독

[이데일리 유준하 기자] 대신증권은 3일 엠씨넥스(097520)에 대해 2분기에는 신종 코로나 바이러스 감염증(코로나19) 여파로 스마트폰 시장이 위축되면서 전년 동기 대비 실적이 감소했지만 하반기부터 삼성전자(005930) 보급형 스마트폰향 카메라모듈의 주력 공급업체로서 반사이익이 기대된다고 평가했다. 이에 투자의견은 '매수', 목표주가는 4만 5000원을 유지했다.

ChosunBiz 10 YEARS

포스트 코로나시대, Digital Transformation

산업 부동산 증권 테크 금융 정책 사사 국제 오피니언 피플

테크 ICT/미디어

카메라부품업계, 갤럭시 '괴물 카메라'에 부푼 꿈… 매출 1조 클럽 진입 늘듯

조선비즈 | 설성인 기자

입력 2020.02.19 06:00

스마트폰 탑재 카메라수 늘고 화소수 높아져
모듈·칩·렌즈 등 부품 수요 늘어 실적 개선 전망

삼성전자가 다음달 공식 출시하는 '갤럭시 S20' 시리즈는 이전 제품과 비교해 개선된 카메라 성능이 눈길을 끈다. 최고 사양 제품인 갤럭시 S20 울트라 후면에는 1억800만화소 광각 카메라를 포함해 쿼드(4개) 카메라가 장착됐다. 전면에도 4000만화소 카메라가 들어가 있다. '스페이스 줌'(100배까지 확대) 기능까지 갖췄다.

월스트리트저널(WSJ)은 갤럭시 S20 울트라에 대해 "주머니에 이렇게 강력한 카메라를 가지고 다닐 수 있다고 생각하는 것이 아주 놀랍다"고 했다.

삼성전자가 '괴물 카메라' 스펙의 스마트폰을 내놓으면서 카메라부품업계의 수혜가 예상된다. 스마트폰 카메라 고급화에 부품 공급 물량까지 확대되면서 실적 개선이 기대되기 때문이다.

SAMSUNG Galaxy S20 Ultra 5G

NEW

tobii pro / Glasses 3
시선추적의 새로운 시작
문의하기

테크 주요뉴스

당뇨약 '메포민' 잘 안 듣는 환자 이유 찾았다

日 소프트뱅크의 반전…'역대 최대 적자→역대 최대 흑자'

LGU+ "AR글래스, 콘텐츠 넘어 마켓팅 플랫폼으로 확장"

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Why MCNEX is growing continuously

Increasing demand of automotive sensing camera & High resolution camera (8MP ~)

전자신문 Conference allshowTV ETEdu English

통신&방송 SW&게임&성장기업 소재&부품 전자&자동차&유통 경제&금융 산업&과학&정책

엠씨넥스, 日 자율차에 '인캐빈' 카메라 공급...시범차 130대 분량

발행일 : 2020.03.08

기사만 콕

[올쇼TV] 레드햇이 소개하는 쿠버네티스 클러스터 통합 관리법 (8/19 생방송)

MCNEX Multimedia Core of the Next...

엠씨넥스가 일본 완성차 업체의 자율주행 시범차에 실내 확인용 카메라를 공급한다. '인캐빈(in-cabin)' 카메라로도 불리는 이 카메라는 자율주행 시대 중요도가 커지는 부품이다.

엠씨넥스는 일본 완성차 업체에 인캐빈 카메라를 납품했다고 8일 밝혔다. 공급 물량은 차량 130대 분량이며, 지난 1월부터 2월 말까지 공급을 완료했다고 설명했다. 구체적인 고객사는 계약상 공개하지 않았다. 회사 관계자는 다만 "일본을 대표하는 자동차 업체의 자율주행 시범차에 탑재된다"고 소개했다.

인캐빈 카메라는 차량 실내에 장착돼 운전자 상태를 실시간 확인하고 실내 어린이를 비롯한 동승자, 반려동물, 수하물이 차량 내부에 방치되는 것을 감지하는 데 활용된다.

MK 뉴스 오피니언 프리미엄 연예 스포츠 증권 부동산 교육

뉴스홈 전체기사 경제 기업 사회 국제 부동산 증권 정치 IT·과학 문화 기획·연재 Special Edition 인기뉴스 암호화폐 오늘의

IGOLF TOTAL GOLF MEMBERSHIP 그린피 전액 지원 주중/주말 4인 무기명 통합 멤버십

엠씨넥스, 국내 자율주행차 공급업체로 부상

자율주행 관련 총 242억원 규모 국책과제 주관중
"미·이스라엘 솔루션 업체들과도 선행기술 협력중"

안병준 기자 | 입력 : 2019.10.11 08:59:06 0

카메라모듈 제조업체 엠씨넥스가 국내 자율주행차 공급망의 선두 업체로 부상하고 있다.

엠씨넥스는 자동차부품연구원, 전자부품연구원, 서울대 등과 함께 수행하고 있는 산업부 9대 핵심 과제 중 비중이 가장 높은 레벨(Level) 3 이상의 자율주행 및 영상센싱과 관련된 국책과제를 주관중이다. 오는 2021년까지 개발예정인 이 국책과제에는 5년간 정부출연금 158억, 민간부담금 84억원 등 총 242억원이 투입된다.

10일 민동욱 엠씨넥스 대표는 "최근 현대차그룹이 자율주행과 관련한 대규모 투자를 진행하면서 시장이 활성화될 것으로 기대된다"면서 "엠씨넥스가 보유한 생체인식 및 영상인식 관련 기술이 자율주행 분야에서도 활용될 수 있고, 현재 미국 및 이스라엘의 솔루션업체들과 자율주행 시스템 및 ADAS와 관련된 선행기술 분야에서 활발한 협력을 진행 중인만큼 향후 긍정적인 소식이 기대된다"고 밝혔다.

엠씨넥스는 최근 스마트폰의 `멀티 카메라` 트렌드를 타고 올해 매출 1조원 클럽 달성을 바라보고 있다. 갤럭시 S시리즈와 갤럭시 폴드 등 프리미엄 제품에 카메라 모듈을 공급하는 것은 물론 갤럭시 A시리즈 등 삼성

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Why MCNEX is growing continuously

Increasing demand of actuator

VCM → Encoder → OIS → Tilt OIS → Folded zoom

thewebdaily

경제 산업 정치·사회 엔터테인먼트 컬처·라이프 Ch.웹데일리

2020-07-28 17:24 | 기업

[삼성전자 갤럭시 언팩 수혜주 ② 엠씨넥스] 갤럭시Z 폴드2에 1000만 화소 전면 카메라 모듈 공급

초소형 카메라 모듈 분야서 기술력 갖춰... 갤럭시 20 시리즈에 사용되는 액추에이터 제조

'생산설비 증설' 엠씨넥스, 갤럭시 S20 효과 '톡톡'

삼성전자 출하량 4000만대 예상...베트남 공장 3공장 완공임박, 4공장도 검토

조영갑 기자 | 공개 2020-03-09 07:40:25

이 기사는 2020년 03월 05일 14:26 더벨 유료페이지에 표출된 기사입니다.

휴대폰 카메라모듈업체 엠씨넥스가 '갤럭시 S20 울트라'로 분주하다. 갤럭시 S20 울트라의 판매량 증가로 카메라모듈 수요 역시 늘어나면서 생산능력(capa)을 끌어올리기 위한 생산설비 증설 작업에 바쁜 일정을 보내고 있다. 엠씨넥스는 향후 추가 증설도 고심하고 있다.

5일 업계에 따르면 엠씨넥스는 휴대폰 카메라모듈 생산라인을 현재 수준에서 20%가량 증설하는 공사를 막바지에 두고 있다. 삼성전자가 출시한 갤럭시 S20 울트라 모델의 출고량이 크게 증가하면서 1차 벤더사인 엠씨넥스의 카메라모듈 수요도 늘어난 탓이다.

엠씨넥스는 현재 휴대폰 카메라모듈을 한국, 중국, 베트남에서 생산하고 있다. 이번 생산설비 증설은 베트남 하노이 인근의 닌빈성 3공장으로 파악된다. 베트남 현지 관계자는 "2019년말 준공식을 거쳐 현재 3공장의 증축을 완료했고, 인테리어 등 내부 작업을 진행하고 있다"고 말했다. 엠씨넥스는 베트남에 추가 부지 확보를 전제로 4공장 증설도 검토하고 있는 것으로 알려졌다.

업계에선 갤럭시 S20 울트라 모델을 소형 카메라모듈 기술의 집약체로 평가하고 있다. 후면카메라에 광학식 손 떨림 방지(OIS) 기술을 적용한 1억800만 화소의 기본 사양 카메라를 탑재하고, 별도로 4800만 화소 망원 카메라, 1200만 화소 광각 카메라, Depth Vision(심도) 카메라 등 총 4개의 쿼드렌즈를 구성해 최대 100배 디지털 줌을 지원한다.

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Why MCNEX is growing continuously

Increasing demand of biometric sensing module

Capacitance → Optical sensing module

S. 경제정책 기업 부동산 금융 증권 국제 정치 엔터테인먼트 테크 사회 IR

정책 거시경제

HOME > 기업 > IT

IT

바뀌는 스마트폰 지문인식 부품 지형도...내장형 '광학식' 대세

윤시지 기자(sjy0724@sisajournal-e.com)

승인 2020.05.14 17:24 댓글 0

국내 파트론 · 엠씨넥스 · 드림텍 등 광학식 FoD 모듈 공급
코로나19 여파로 일부 모델 정전식 채용으로 선회 가능성도 제기

전자신문 Conference allshowTV ETEdu English

통신&방송 SW&게임&성장기업 소재&부품 전자&자동차&유통 경제&금융 산업&과학&정책

'삼성 중저가폰 반격' A시리즈 다수에 디스플레이 지문인식

발행일 : 2019.01.13

기사만 콕

삼성전자가 신형 갤럭시A 시리즈에 디스플레이 지문인식을 대거 도입한다. 디스플레이 지문인식은 화면상에서 지문을 판별하는 기술이다. 삼성은 중가 모델에 신기술을 적극 채택해 제품 경쟁력을 강화하고 시장을 수성하겠다는 전략으로 풀이된다.

13일 업계에 따르면 삼성전자는 올해 출시 예정인 갤럭시A90, A70, A50 3개 모델에 디스플레이 지문인식 기능을 준비하고 있다. 센서와 모듈 제조사들을 선정했으며 2분기 양산에 돌입할 계획으로 파악됐다. 신형 갤럭시A 시리즈는 올해 총 아홉 가지 모델이 준비되고 있다. A90, A80, A70 같이 숫자로 구분되고, 숫자가 클수록 성능이 우수하다. 디스플레이 지문인식 적용이 결정된 모델은 전체 30%에 달한다.

디스플레이 지문인식은 올해 삼성이 처음 선보이는 기능이다. 1분기 발표될 갤럭시S10 시리즈 상위 2개 모델에 디스플레이 지문인식이 먼저 적용되고, 곧바로 갤럭시A 시리즈가 뒤를 이을 것으로 예상된다. 기술적 방식은 달라 갤럭시S10에는 초음파가, 갤럭시A에는 광학식이 쓰일 예정이다.

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Why MCNEX is growing continuously

Registered the Tier 1 vendor to Hyundai/Kia motors in early 2020 since 15 years of Tier 2 vendor

디지털데일리
ROHM 600V Super Junction MOSFET PrestoMOS™
최신기사 IT정책 통신/방송 e비즈/솔루션 보안 금융IT 콘텐츠 기업문화 산업 국제
실시간속보 ▶갤노트20 역대급 흥행? 자급제 쏠림에 이통사 '눈치'

HOME > 뉴스

엠씨넥스, 현대·기아차 '1차 벤더' 된다…전장용 사업 본격화

2020.02.17 20:22:25 / 김도현 dobest@ddaily.co.kr

관련기사
- 늘어나는 카메라모듈 채택…자율주행차도 '탑재'
- LG이노텍, 카메라모듈 상승세 계속…4분기 실적 '사상 최대'(상보)
- 드림텍, 나무가 품는다…카메라모듈 사업 진출
- 서울반도체, '5G·카메라' 특허 경매기한 연장…2020년 2월28일까지
- 똑똑한 3D 카메라의 등장…'두뇌' 인텔-'눈' LG전자 협력

[디지털데일리 김도현기자] 엠씨넥스가 현대자동차와 기아자동차의 1차 벤더가 된다. 전장용 카메라 사업을 통한 수익다각화에 가속도가 붙을 전망이다.

전자신문 Conference allshowTV ETEdu English
통신&방송 SW&게임&성장기업 소재&부품 전자&자동차&유통 경제&금융 산업&과학&정책

'현대기아차 신차 효과'…엠씨넥스, 전장 카메라 사업 호조

발행일 : 2019.10.01

Eng 기사만 콕 가 가
[올쇼TV] 화웨이가 소개하는 컴퓨팅 트렌드 분석, 인텔리전트 컴퓨팅 솔루션 (8/24 생방송)

MCNEX
Multimedia Core of the Next...

스마트폰 멀티카메라 적용 확대로 올해 사상 최대 실적을 예고한 엠씨넥스가 차량용 카메라 부문에서도 호기를 맞고 있다. 핵심 고객사인 현대·기아차가 대규모 신차 출시를 준비하고 있어 차량용 카메라 공급 확대 기대감이 커졌다.

1일 업계에 따르면 현대자동차그룹은 올 4분기부터 내년 말까지 신모델 25종을 출시할 계획이다. 제네시스 SUV 등 기존 라인업에 없던 신차를 비롯해 완전변경, 부분변경 모델이 대거 준비되고 있다. 올 2분기 영업이익 1조원 달성에 성공하며 실적 반전을 이룬 현대차그룹은 신차 출시로 성장을 가속화하려는 것으로 보인다.

이에 따라 현대차그룹에 자동차용 카메라 모듈을 공급하는 엠씨넥스도 신차 출시 확대에 따른 공급 증가를 노리고 있다. 엠씨넥스는 현대기아차 카메라 모듈 핵심 협력사다. 전후방 카메라나 서

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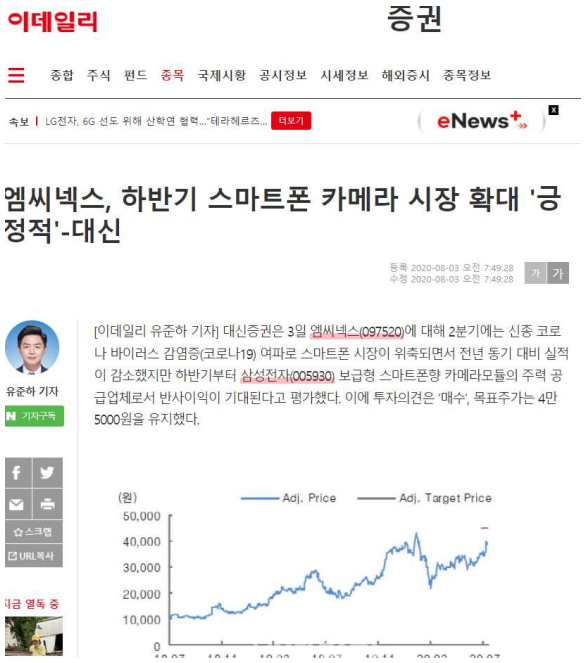
I Prospect of Analyst

Benefit by change of market trend: increasing demand of middle class phone than premium.

Company	Target value	Date
Daishin Securities	45,000won	03 Aug 2020
Shinyoung Securities	43,000won	03 Aug 2020
Eugene Investment	40,000won	25 May 2020



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MCNEX Competitiveness

1. Proven Quality management system

- Built a strict quality management system through dealing with Samsung and Hyundai/Kia motor, Japan and USA customers
- Quality certificate: IATF16949, ISO14001, OHSAS18001
- 2014' : "Best Quality Supplier Certificate" granted by Samsung
- 2015' : "The Best Partner in 2015" granted by Samsung
- 2018' : "The Innovation Awards in 2018" granted by Samsung Group

2. Organized global sites – Just in Time delivery

- Factory site: Korea R&D (Seoul), China (Shanghai) and Vietnam (Hanoi)
  – Enough production facility
- Sales office: Korea (Seoul), China (Shanghai), Vietnam (Hanoi), USA(San Jose), Japan, Taiwan, India (New Delhi) – On-site support
- Operating R&D centers both in Korea and Vietnam : QUICK Response to customers
- Preparation for new customers in the 3rd factory (To be built by Oct. 2019)
- Having a strong supply chain for the last 15 years - Fine delivery customer service

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3. Vietnam factory competitiveness

- Cost Optimized factory : B-Grade region
- Stable relationship with union : No union dispute since establishment
- “Enterprise Award for Labor” granted by Vietnamese Federation of Labor
- Factory in bonded area
- Fast Custom Clearance in MCNEX’s factory (1~2 days earlier custom clearance)
- **Built the 3rd factory for new businesses.**

4. Image solution specialized company

- **Design & manufacturing of actuator & camera module in house**
- Higher career & many experienced engineering resources for high resolution & multi-functioned camera
- Provide total solution of image solution, including H/W, S/W, Optic & mechanic design, image tuning

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5. Various experience of image solution technology (Leading Image Technology)

- Co-work with **Microsoft** for stereo camera development for AR, VR application
- Selected as a standard module of iris recognition camera system into **Qualcomm** AP chip
- Co-work with **Intel** for face authentication system for mobile application
- Many experiences of manufacturing : Single to Quad cameras
- Development partner of autonomous driving level 4 camera module with M company
- Co-work with H/K company for ADAS camera system
- Development of camera system for autonomous driving application with **NVIDIA** AP
- Development of camera system for ADAS application with **TI, NXP** & Socio Next AP
- Many experience of government project for advanced technology

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Why MCNEX made lower output on 2Q 2020

1. Decreased demand of main customer due to covid-19 pandemic
2. Reflected some of material cost of 1Q 2020 to 2Q
3. Less cost saving effect of reduction of labor in Vietnam factory due to less reduction
4. Cost of scrapped non-usable product of new models in 2Q

글로벌이코노믹 증권

특징주 | 시황·전망 | 종목 | 재테크 | 선물 | 공시 | 채권 | 증권일반

맞춤견적으로 편하게 이사하세요 - 가장 쉬운
막막한 내 집 이사, 견적비교부터 이사까지 짐싸로 한번에! zimssa.kr

엠씨넥스 부진한 2분기, 실적 개선 시점은 2021년

2분기 매출액은 컨센서스 대비 3% 밑돌았고 영업이익은 컨센서스 대비 89% 하회

홍진석 증권전문기자 입력 2020-08-06 07:14

MCNEX Multimedia Core of the Next...

엠씨넥스의 2020년 매출액은 전년대비 1% 감소한 1조2549억원, 영업이익 39% 하락한 694억원 등으로 잠정집계됐다. 동사는 불확실한 업황 때문에 하반기 출시예

신영증권 이성훈 애널리스트 엠씨넥스의 2분기 매출액은 전년동기 대비 34% 감소한 2454억원, 영업이익 97% 감소한 10억원으로 집계됐다고 밝혔다. 2분기 매출액은 컨센서스 대비 3% 밑돌았다. 영업이익은 컨센서스 대비 89% 밑돌았다.

Google 광고

이 광고 신고 | 이 광고가 표시된 이유

1분기 자재 비용의 일부를 2분기에 부담했고 베트남 공장 인력을 축소하며 고정비를 축소할 것으로 예상됐으나 실제 인력 감축은 제한적인 규모로 진행됐다. 또한 상반기 플래그십 모델 카메라를 적극 수주했지만 주요 고객사의 판매 부진으로 수익성이 악화됐다. 반면 글로벌 자동차 생산 감소에도 불구하고 자율주행 옵션 채택 증가의 영향으로 2분기 차량용 카메라 매출액은 전년동기대비 8% 증가한 260억원으로 예상된다.

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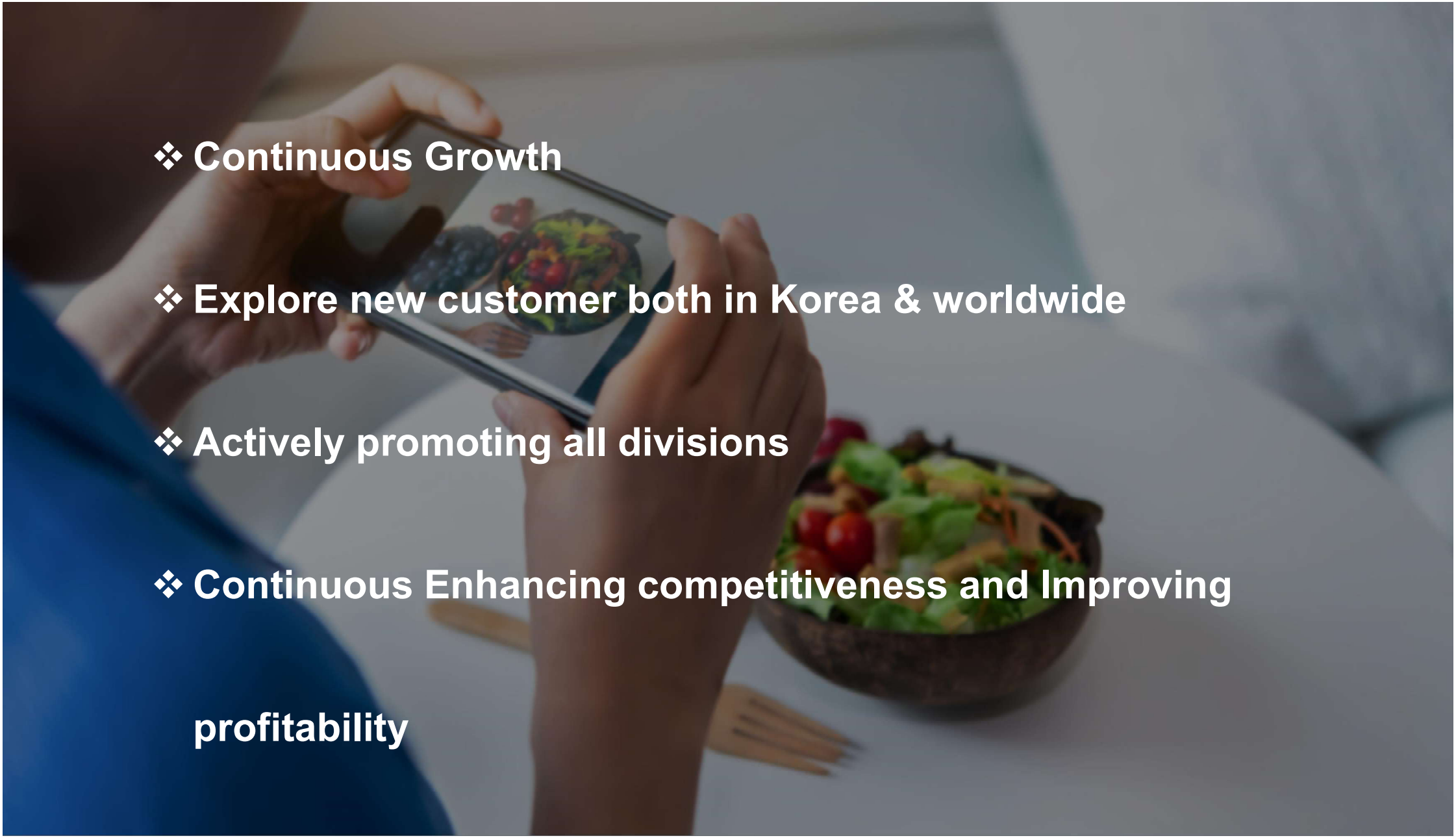
Business target



- ❖ Continuous Growth
- ❖ Explore new customer both in Korea & worldwide
- ❖ Actively promoting all divisions
- ❖ Continuous Enhancing competitiveness and Improving profitability

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MAIN CUSTOMERS

구분	KOREA	CHINA	TAIWAN	JAPAN	VIETNAM	INDIA / INDONESIA	U.S.A
MOBILE	SAMSUNG ELECTRONICS	ZTE中兴	FOXCONN Advancing Through Innovation	KYOCERA	SAMSUNG ELECTRONICS	micromax nothing like anything	QUALCOMM
			Arima COMMUNICATIONS / LG Electronics	SHARP	KYOCERA	LAVA MOBILEPHONE	intel REALSENSE TECHNOLOGY
			COMPAL 仁寶電腦 / Quanta Computer	FUJITSU	SHARP	polytron	Microsoft
			Panasonic	NEC	FUJITSU	VIDEOCON	intel
			SONY				
AUTOMOTIVE	HYUNDAI / KIA MOTORS	北京现代 / KIA 东风悦达·起亚		TOYOTA DENSO / Calsonic Kansei	HYUNDAI / KIA MOTORS		molex / intel REALSENSE TECHNOLOGY
	HYUNDAI MOBIS / Mando Halla Company	GEELY		NEXTY Electronics	HYUNDAI MOBIS		JVISUSA LLC
	PSA PEUGEOT CITROËN / VOLVO	CAPSA 长安标致雪铁龙		TOYOTA TSUSHO	Mando Halla Company		FIRSTECH
	LG E / S&T Motiv / DOOSAN / SSANGYONG MOTOR				LG Electronics		core photonics Israel

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History

2019

2019. 10. Built the 3rd Factory in Vietnam

2018

2018. 06. Automotive line set-up in Vietnam 2nd factory
2018. 04. IATF 16949 Certificate
2018. 01. **Samsung Best innovative partner of year**

2016-2017

2017. 07. Built the 2nd factory in Vietnam
2017. 03. Production of Dual camera module for Samsung
2017. 03. Start to ship encoder
2016. 11. Start to ship fingerprint module to Samsung
2016. 01. Start to ship OIS module

2014-2015

2015. 12. Best partner of year for Samsung
2014. 10. Listed in Samsung overseas supplier
2014. 06. Registered SEV/SEVT

2012-2013

2013. 12. Built the 1st factory in Vietnam
2012. 07. Listed in KOSDAQ market

2009-2011

2011. 12. Start a business with Samsung
2011. 05. Designated World champ 300
2011. 04. Start to ship a camera to PSA
2010. 12. Start to ship 8M actuator
2009. 06. Designated a good manufacturing technical R&D center

2007-2008

2008. 03. Built the 2nd factory in Shanghai
2007. 05. SQ certificate (Hyundai quality system certificate)
2007. 01. ISO14001/TS 16949 certificate

2005-2006

2006. 09. Established MCNEX Shanghai
2005. 06. Registered venture company
Built R&D center

2004.12. Established MCNEX

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Added Equity Index

1. MSCI(Small Cap) - 11 Nov 2019

2. KRX KOSDAQ 150 - 12 Dec 2019

3. KRX300 - 12 June 2020

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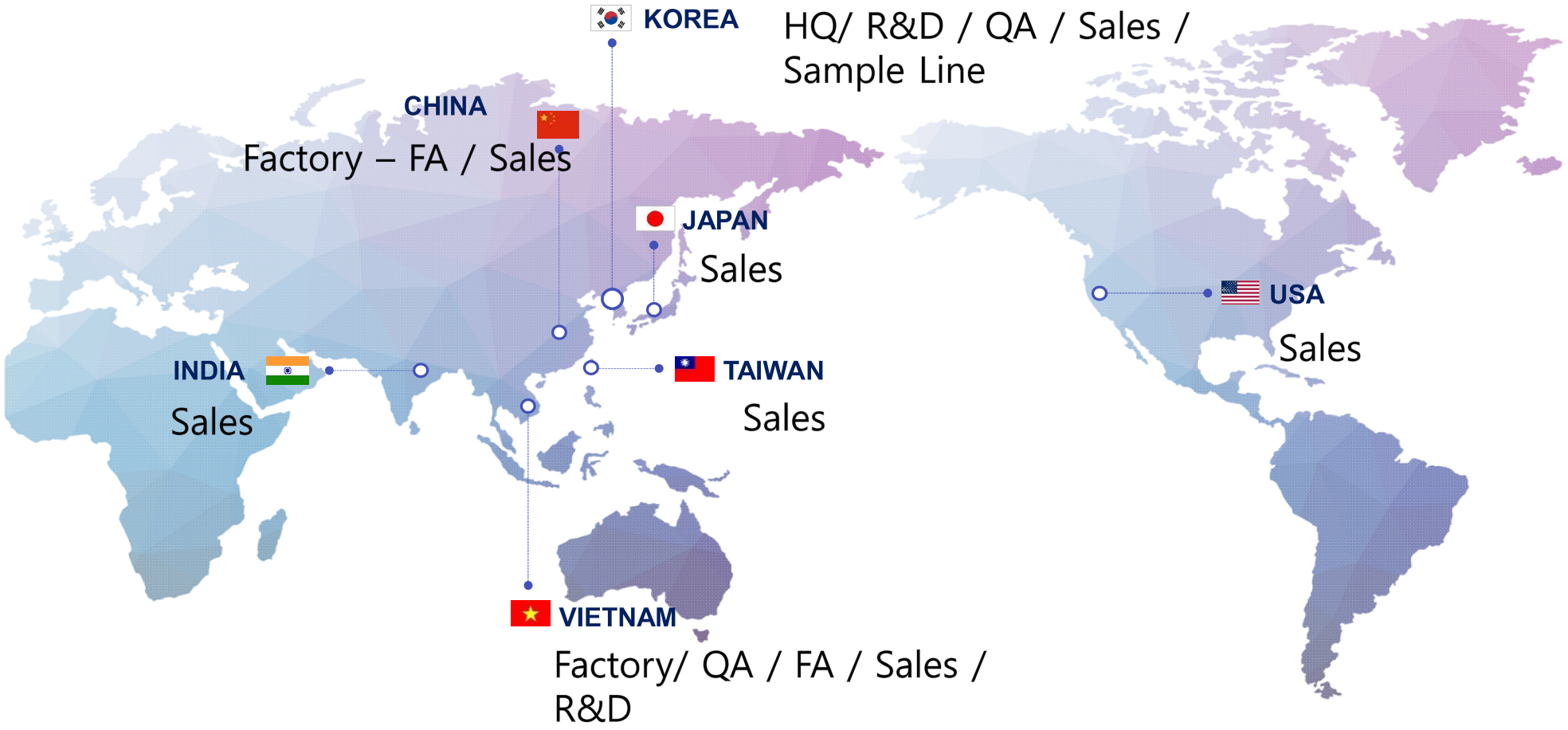
Global network



KOREA	Site	Seoul, Korea
	Area	11,308 ㎡

VIETNAM	Site	Ninh Binh, Vietnam
	Area	125,400 ㎡

CHINA	Site	Shanghai, China
	Area	7,061 ㎡

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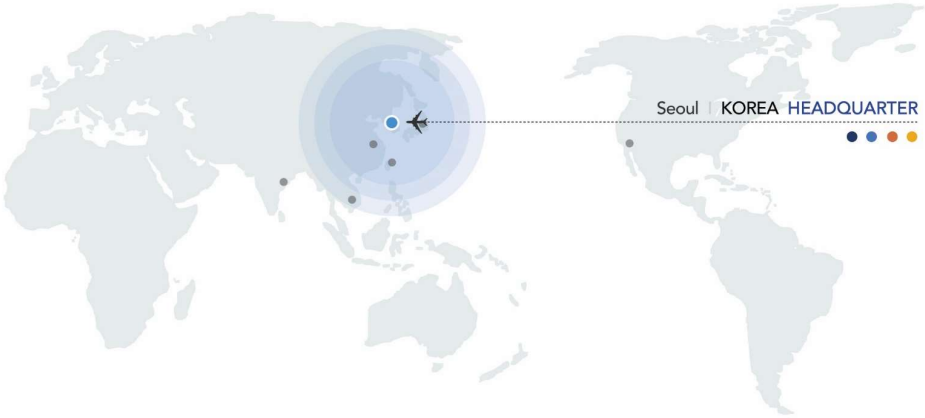
Headquarter

GLOBAL NETWORK

SEOUL. KOREA.

● R&D ● MANUFACTURING ● SALES ● FAE(FIELD APPLICATION ENGINEER)



ORGANIZATION

ADMIN	MOBILE BUSINESS	AUTOMOTIVE BUSINESS	SYSTEM BUSINESS
H/R	MOBILE R&D	R&D	SYSTEM SALES
ACCOUNTING	MOBILE SALES	PRODUCTION	SALES SUPPORT
FINANCE	SENSOR MODULE	QUALITY	
COMPUTATIONAL TEAM	SENSOR MODULE R&D	SALES	
	PRODUCTION ENGINEERING	PRODUCTION MANAGEMENT	
	ENGINEERING QUALITY	AUTOMOTIVE PURCHASING	
	IQC TEAM	SCM	
	CUSTOMER QUALITY	PROCURING	
	SENSOR MODULE QUALITY		
	ACTUATOR COMPONENT QUALITY		

SEOUL. KOREA

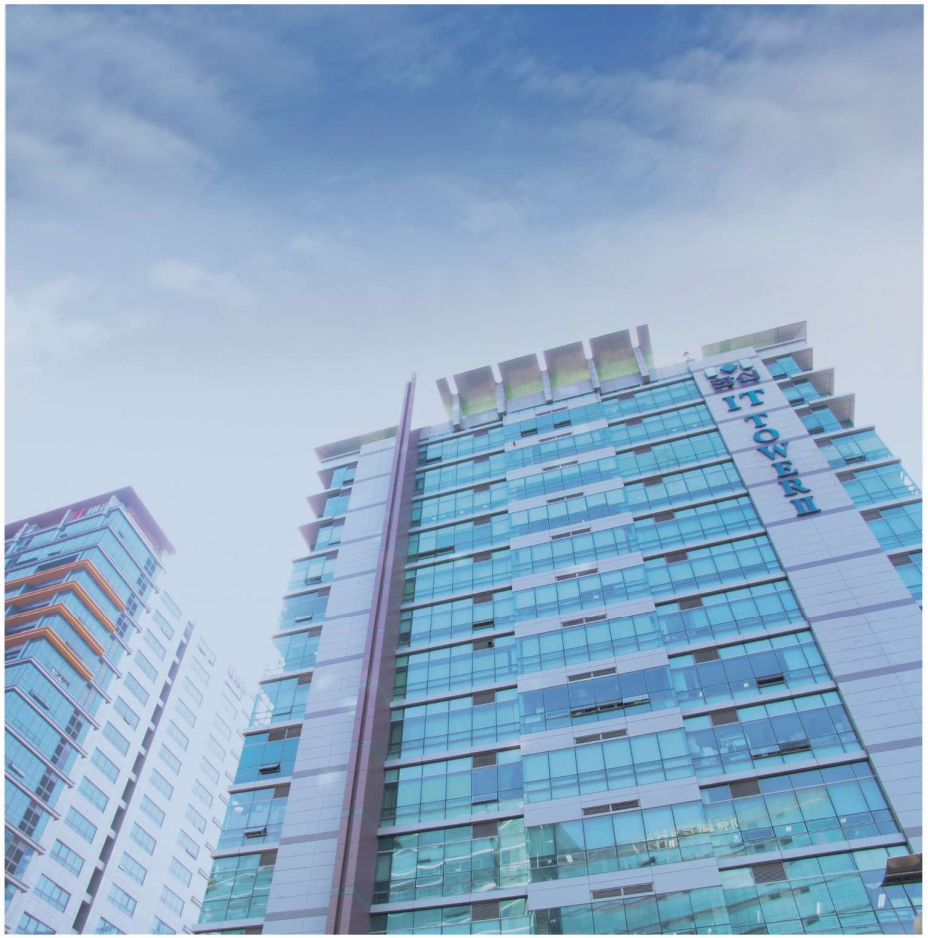
HEADQUARTER

SEOUL / KOREA HEADQUARTER

ADDRESS . HanShin IT Tower II 11F, 47, Digital-ro 9-gil, Geumcheon-gu, Seoul, KOREA

TEL . +82-2-2025-3600 / IP Phone: 070-8630-6800 FAX . +82-2-2025-3606

MANUFACTURING / R&D/ RELIABILITY TEST LAB/ SALES



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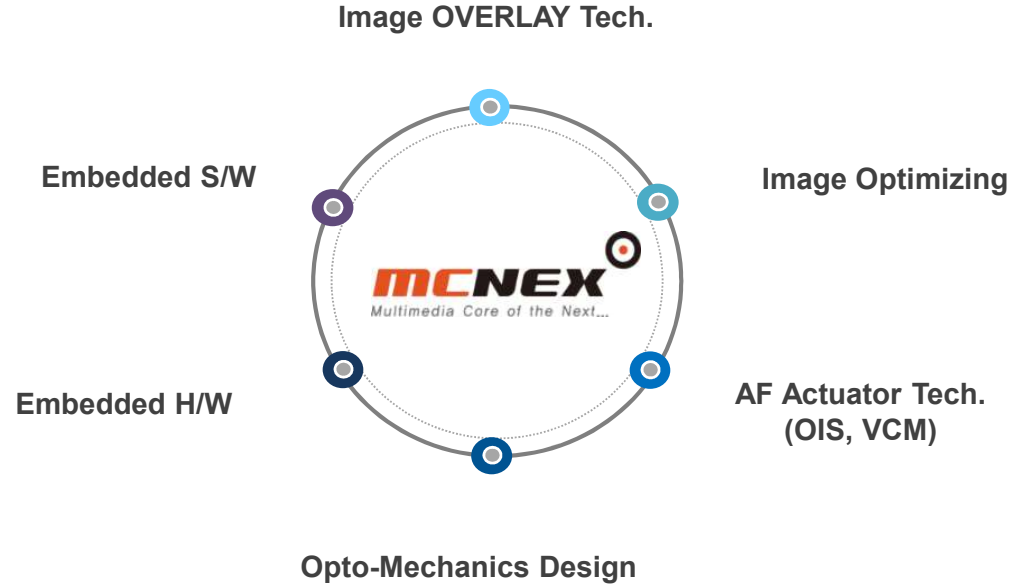
Engineering Resources

“Strong R&D with expertise in various area”

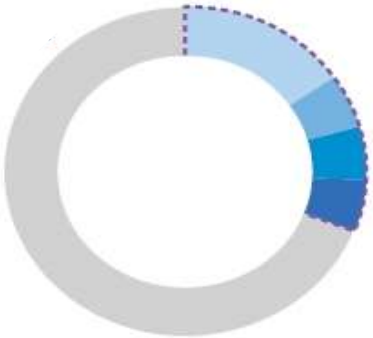
“Provide Total solution of image tech in house



R&D Resources

Total Resources at HQ **498**

Entire R&D Resources **321** (64.5%)



Direct
Oversea R&D Included **182** (36.6%)

Indirect
Process / Quality **139** (27.9%)

60 Patents registered
25 Patents Filling

- Mobile
- Automotive Camera
- Etc.

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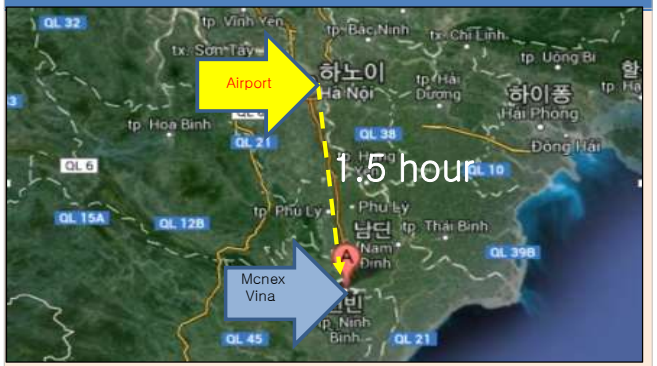
Vietnam Factory

In & Outside view

Sky view

Location



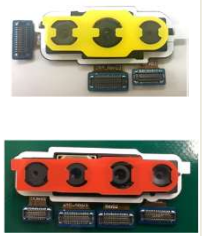
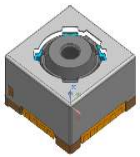
Location	Phuc Son Industrial Park, Ninh Binh City

Scale	Total area	Building area	Employee
	87,000㎡	125,400㎡	6,124

Main Customer

SAMSUNG ELECTRONICS, KYOCERA, SHARP, HYUNDAI, KIA MOTORS, HYUNDAI MOBIS, FUJITSU

List of Product & Capacity

List				
Cap	Camera Module	Actuator	Fingerprint Verification	Automotive Camera
	30M / month	11M / month	9M / month	1.5M/ month

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Vietnam Factory view

MCNEX VINA 3rd FACTORY

MCNEX VINA Welfare Center

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Achievement of Vietnam factory

2018

1, Samsung Electronics Corp.
-. **The Best Innovative Supplier of the Year**
(6 April.2018)

2017

1, Vietnamese Federation of Labor
-. **Enterprise Award for Labor**
2, Ninh Binh Province Social Insurance committee
-. Excellent Enterprise Award for Safety environment
-. Excellent Enterprise Award for Social insurance / Medical insurance

2016

1, People's Committee of Ninh Binh Province
-. Excellent Enterprise Award
2, Industrial Complex committee
-. The Best Enterprise in Ninh Binh Province

2015

1, Samsung Vietnam Electronics Corp.
-. **The Best supplier of the year**
-. The Best Supplier of the year in Human Resource
2, High-Tech Enterprise Certificate By Vietnamese Government
-. Tax favor for 10 years
3. Union of Industrial Complex committee
-. The Best Union in Ninh Binh Province

2014

1, Vietnamese Society
Excellent Enterprise Award of Social / Medical Insurance

※ 6 Years From 2013 to 2018.
-. No Labor Dispute.
-. No Industrial Accident

※ MCNEX Position in Ninh Binh
-. 40 % portion of Export ($483M out of $1.1B)
-. 26 % portion of GDP ($483M out of $1.8B)

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Vietnam Factory video

Running Time : 1mins 30secs

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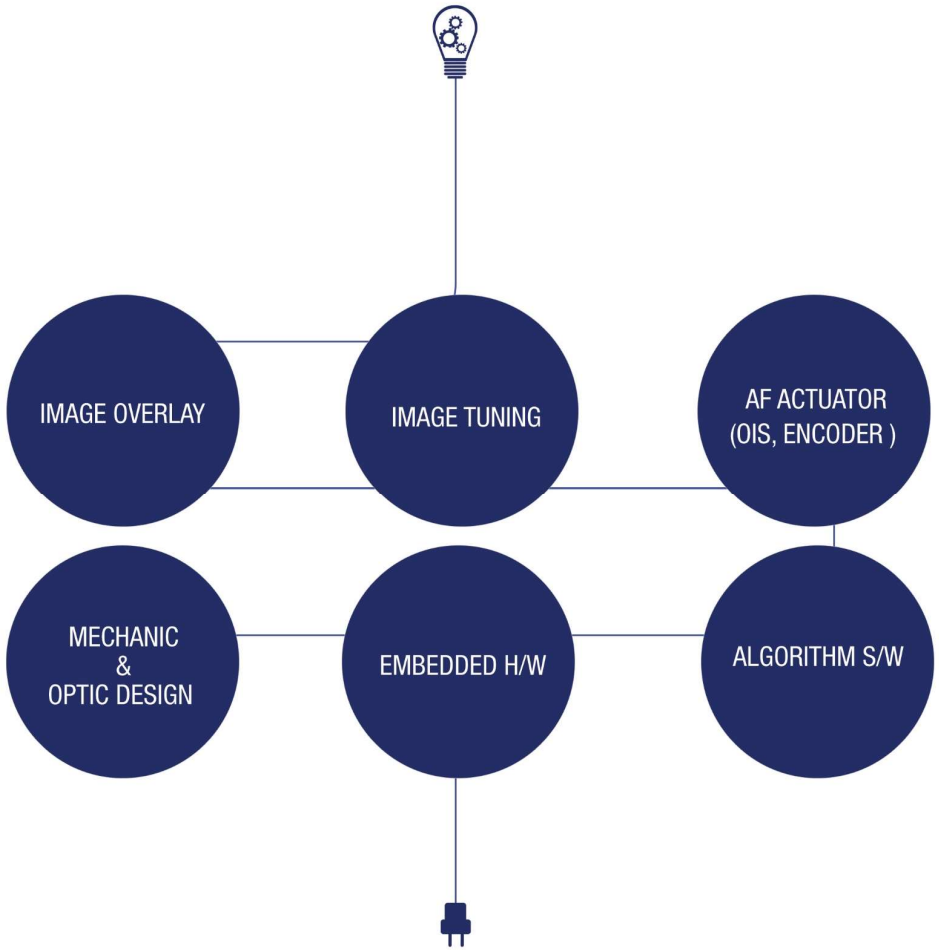
R&D capability

MCNEX R&D CENTER

Continuous development of new technology with experience engineers



TOTAL SOLUTION

Provide total solution of image technology from H/W to S/W in house

QUALITY MANAGEMENT

CONTINUOUS QUALITY MANAGEMENT FOR CUSTOMER SATISFACTION

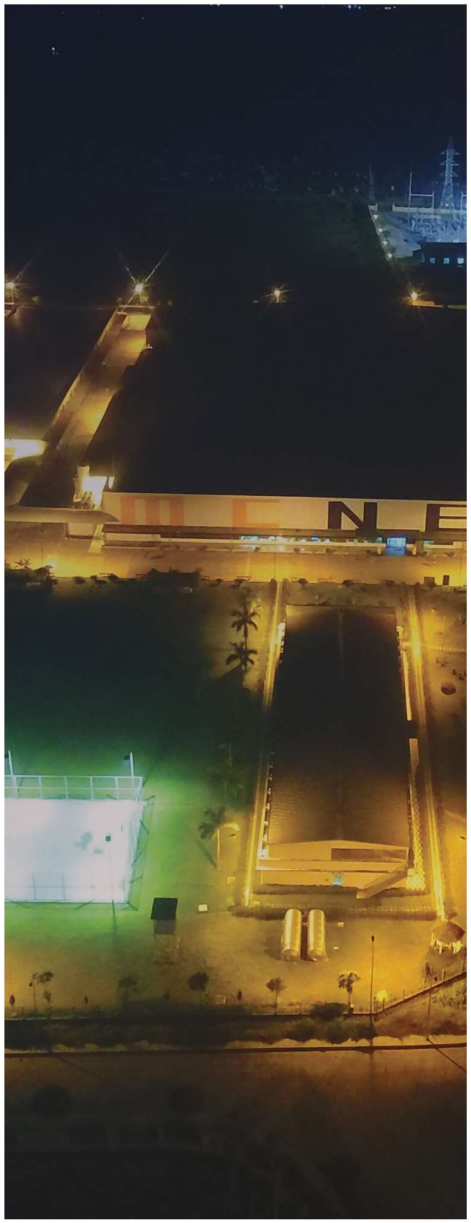
The primary value that MCNEX aims for is customers satisfaction. The best quality, engineers and experiences create the synergy to make a continuous innovation.

MCNEX promises to make the most innovative and stable solution as creating a future value Bring confidence over the satisfaction for the customers' choice.

DIFFERENTIATED COMPETITIVENESS BY EFFICIENT RESEARCH & DEVELOPMENT

Leading the camera module market by continuous research and speedy decision making that maximize the the future value

Continuous research & development make more innovative, comfortable tomorrow



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Certificates

MCNEX
Multimedia Core of the Next...

MCNEX CERTIFICATE

SEOUL / KOREA HEADQUARTER

IATF 16949	Quality management system
ISO14001:2004	Environment management system
OHSAS18001:2007	Safety and health management system
	NEW technology certification

SHANGHAI / CHINA

IATF 16949	Quality management system
ISO9001:2008	Quality management system
ISO14001:2004	Quality management system
IECQ HSPM	Harmful substance process management system

NINHBINH / VIETNAM

ISO9001:2008	Quality management system
ISO14001:2004	Environment management system

PATENT

60 REGISTERED 25 APPLIED

MOBILE SOLUTION
AUTOMOTIVE SOLUTION
IOT / AR / VR / MR

RESEARCH MANPOWER

TOTAL EMPLOYEES : 498 (MARCH.2019)
TOTAL RESEARCH MANPOWER : 272
DIRECT : 134 INDIRECT 138
RESEARCH MANPOWER RATE = 54.4%

PATENT

60 REGISTERED 25 APPLIED | MOBILE SOLUTION AUTOMOTIVE SOLUTION IOT / AR / VR / MR

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BUSINESS AREA

TOTAL MOBILE SOLUTION

Make a dream come true on a basis of change and innovation

SMART PHONE CAMERA

SINGLE CAMERA
DUAL CAMERA
TRIPLE CAMERA
QUAD CAMERA
MOTION DETECTION CAMERA
STEREO CAMERA
3D DEPTH CAMERA

BIOMETRIC MODULE

IRIS SCAN MODULE
FINGERPRINT SENSING MODULE
FACE RECOGNITION MODULE

MATERIAL

OIS
ENCODER
VCM
GIMBAL (TILT. OIS)

SMART PHONE CAMERA

BIOMETRIC MODULE

MATERIAL

Various camera module (5M FF ~ 108M AF) with stable yield.

HIGH PERFORMANCE I MICROMINIATURIZATION I SLIM I AF APPLIED

LEADING MOBILE CAMERA & SECURITY SOLUTION PROVIDER

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Mobile phone camera application

SMARTPHONE CAMERA

SINGLE CAMERA | DUAL CAMERA | TRIPLE CAMERA | QUAD CAMERA
MOTION DETECTION CAMERA | STEREO CAMERA

" STABLE PRODUCTION YIELD OF VARIOUS CAMERA MODULE **8M FF ~ 108M AF**, OPTICAL ZOOM IN&OUT"

Wide Angle VT Lens
76° ~80° ,90° ,120° ,135° ,145° ,182°
8M FF ~ 40M FF

Wide Angle Main Lens
13M AF ~ 108M AF

VCM, OIS, Encoder
16M AF ~ 108M OIS

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Multi camera application

TRIPLE . QUAD CAMERA

Provide more various functions than single & dual camera like panorama, pro, beauty, live focus, auto exposure, slow motion, ar image, hyperlapse, etc.. As combining different resolution and features.

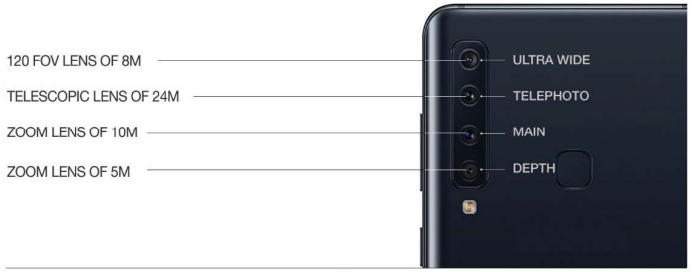
SEE MORE OF THE WORLD

Fill your frame with every detail you see using the 120° Ultra Wide lens that makes capturing panoramic shots easier than ever.

GET UP CLOSE AND PERSONAL

Snap extreme details at a distance without losing image quality with a 10MP telephoto lens featuring 2x Optical Zoom.

QUAD CAMERA



24M AF+10M AF + 8M WIDE+ 5M FF	ALL RGB SENSORS		
F# 1.78, 6P, 77°(D)	F# 2.4, 5P, 46.9°(D)	F# 2.4, 6P, 125°(D)	F# 2.2, 4P, 85°(D)

TRIPLE CAMERA

24M AF+8M WIDE+5M FF	ALL RGB SENSORS	
F# 1.78, 6P, 77°(D)	F# 2.4, 6P, 125°(D)	F# 2.2, 4P, 85°(D)

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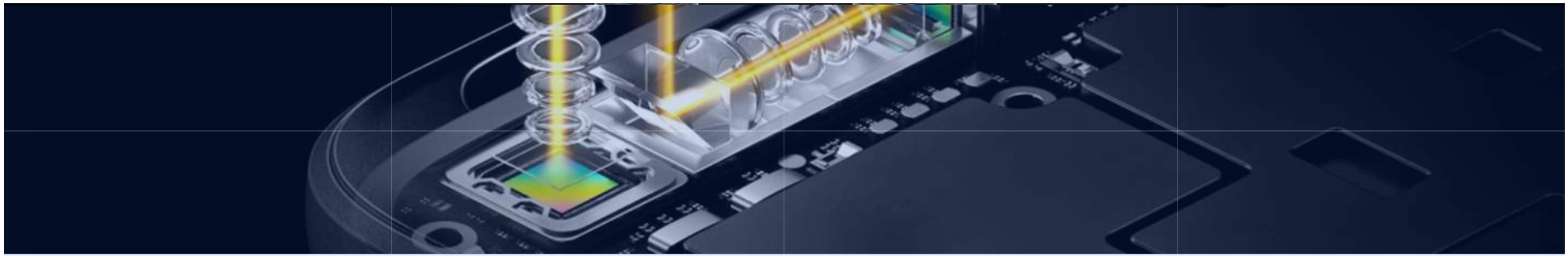
Mobile phone camera products



" STABLE PRODUCTION YIELD OF VARIOUS CAMERA MODULE **8M FF ~ 108M AF**, OPTICAL ZOOM IN&OUT"

Wide Angle VT Lens
76° ~80° ,90° ,120° ,135° ,145° ,182°
8M FF ~ 40M FF

Wide Angle Main Lens
13M AF ~ 108M AF

VCM, OIS, Encoder
16M AF ~ 108M OIS

HIGH PERFORMANCE / THIN / SLIM / AF APPLIED

MINIMIZING THE SENSOR PIXEL SIZE (3.3→2.8→2.2→1.1→1.0㎛)

FINGERPRINT SENSING | IRIS SCAN MODULE

WIDE ANGLE LENS | DUAL CAMERA MODULE

TRIPLE CAM MODULE | QUAD CAM MODULE

※ Currently developing high pixel cameras of 64M, 108M, Big pixel, etc

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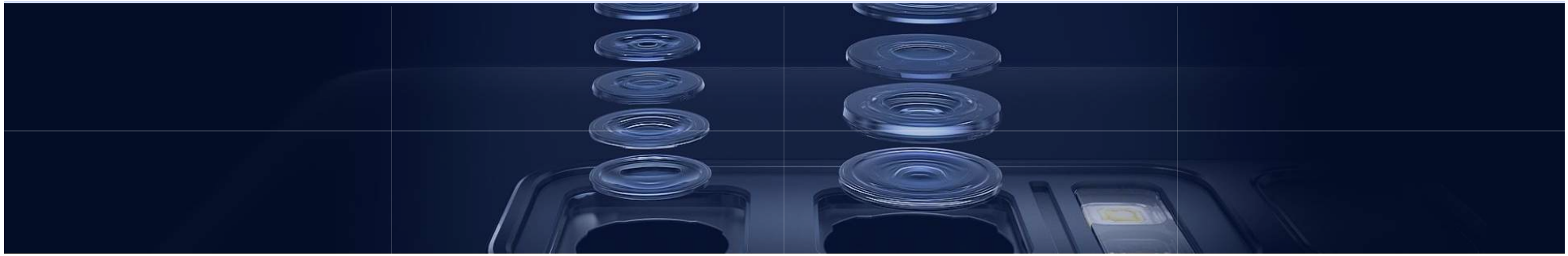
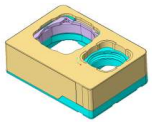
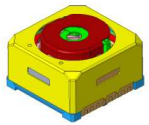
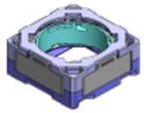
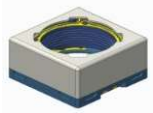
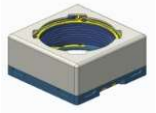
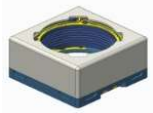
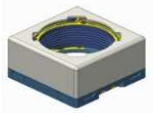
Mobile phone Actuators



- 24M / 48M / 64M/108M High Resolution AF Actuators

ENCODER / OIS		
		
GalaxyS10	GalaxyS20	Galaxy Note20

VCM Actuator		
		
MCA-853961	MCA-S854653	MCA-S854661
		
MCA-S855165	MCA-S854165	

Galaxy S10	Galaxy S20	Galaxy S20 Ultra	Galaxy Note20
Galaxy A10(2019)	Galaxy A20(2019)	Galaxy J3	Galaxy Grand Prime
Galaxy S9	Galaxy Note9	Urbano V03(Kyocera)	Galaxy Note10

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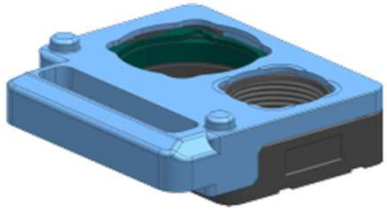
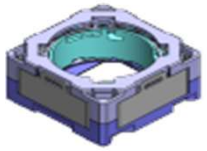
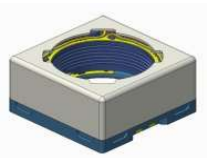
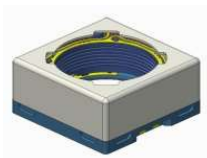
Actuator capability

Development and manufacturing for Smart Phone Application - Total 11M / Mon CAPACITY

- **"EMBEDED own Actuator to 13M~48M Camera Module"**
- **Main Customers : Samsung, Patron, Powerlogics, Camsys**
- **CAPA in VIETNAM : OIS 5M/M, Encoder 3M/M, VCM 3M/M**

OIS: 5M/M	Encoder: 3M/M	VCM(Voice Coil Motor) : 3M/M		
				
MCSO-104661	MCE85-D1	MCA-853961	MCA-S854653	MCA-S854661

- **Main Solution of Samsung Electronics**
- **Started to Sell Single Unit of ENCODER/OIS From 2017'**
- **MP of S20/ NOTE 20 – Aperture Type and TELE Dual Type**

- **Actuator (Function) : Auto Focusing by adjusting the Lens locations**
- **OIS(Function) : Optical Image Stabilization**

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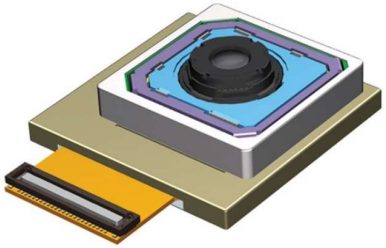
Tilt OIS (S10 Lite/ world first)

GIMBAL . TILT OIS

OUTSIDE VIEW AND FEATURE

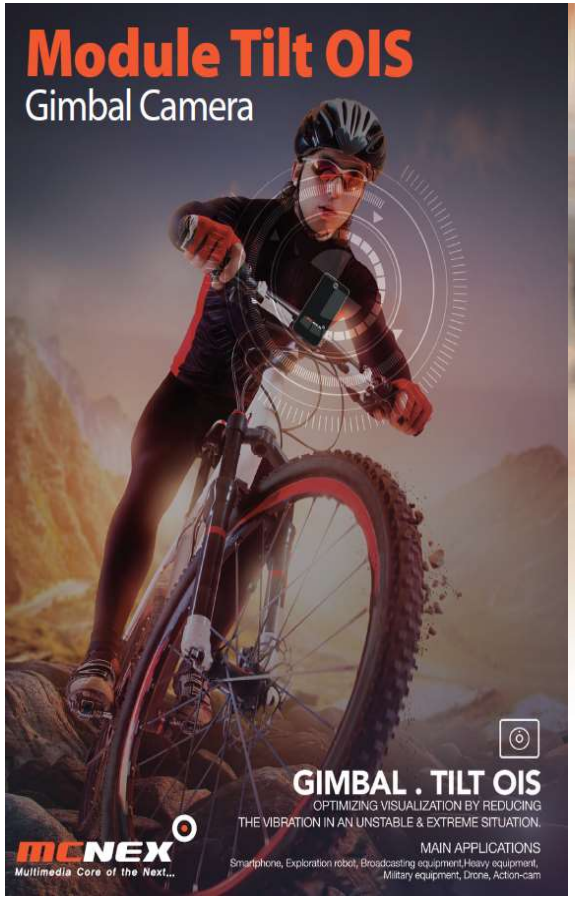
- Applying Module Tilt method result in NO image Distortion
- Stabilization angle is twice better than existing products (1.5deg->3deg)
- Module Tilt OIS : Vibration Reduction + External Tremors Reduction
- Module Tilt method applied for mobile devices (Patent held by MCNEX)



Galaxy S10 Lite

Specification

ITEM	CONDITION
FOOT PRINT	A: 18.4 X 18.4 X 1.8H / B: 14.0 X 14.0 X 4.7H
STABILIZING ANGLE	± 3 deg
MAX CURRENT	AF : 50mA / OIS : 100mA (TBD)
PIXELS	12M
SENSOR	SSK2L3 (LSI)
SENSOR SIZE	7 x 8 (1/2.6 inch)
LENS	CLU807O1B
LENS SPEC	7.6 / 7p
AF STROKE	450um
AF RUNNING TILT	Max 10 min



GIMBAL . TILT OIS

Optimizing visualization by reducing the vibration in an unstable & extreme situation.

Various applications:

Smartphone, Exploration robot, Broadcasting equipment, Heavy equipment,
Military equipment, Drone, Action-cam

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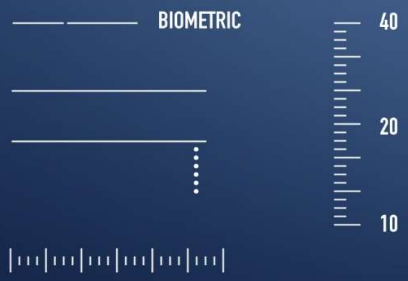
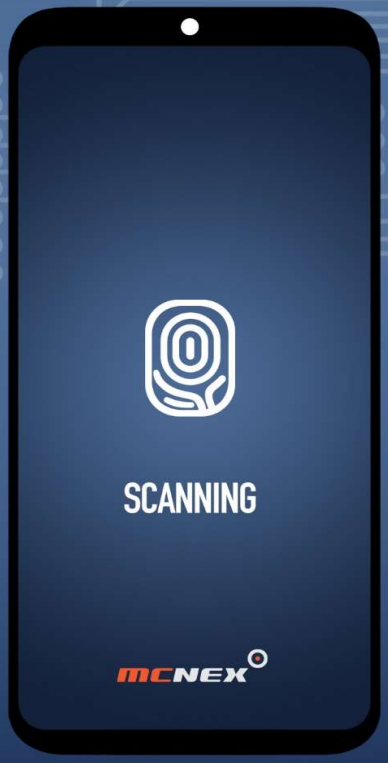
BIOMETRIC SENSING SOLUTION





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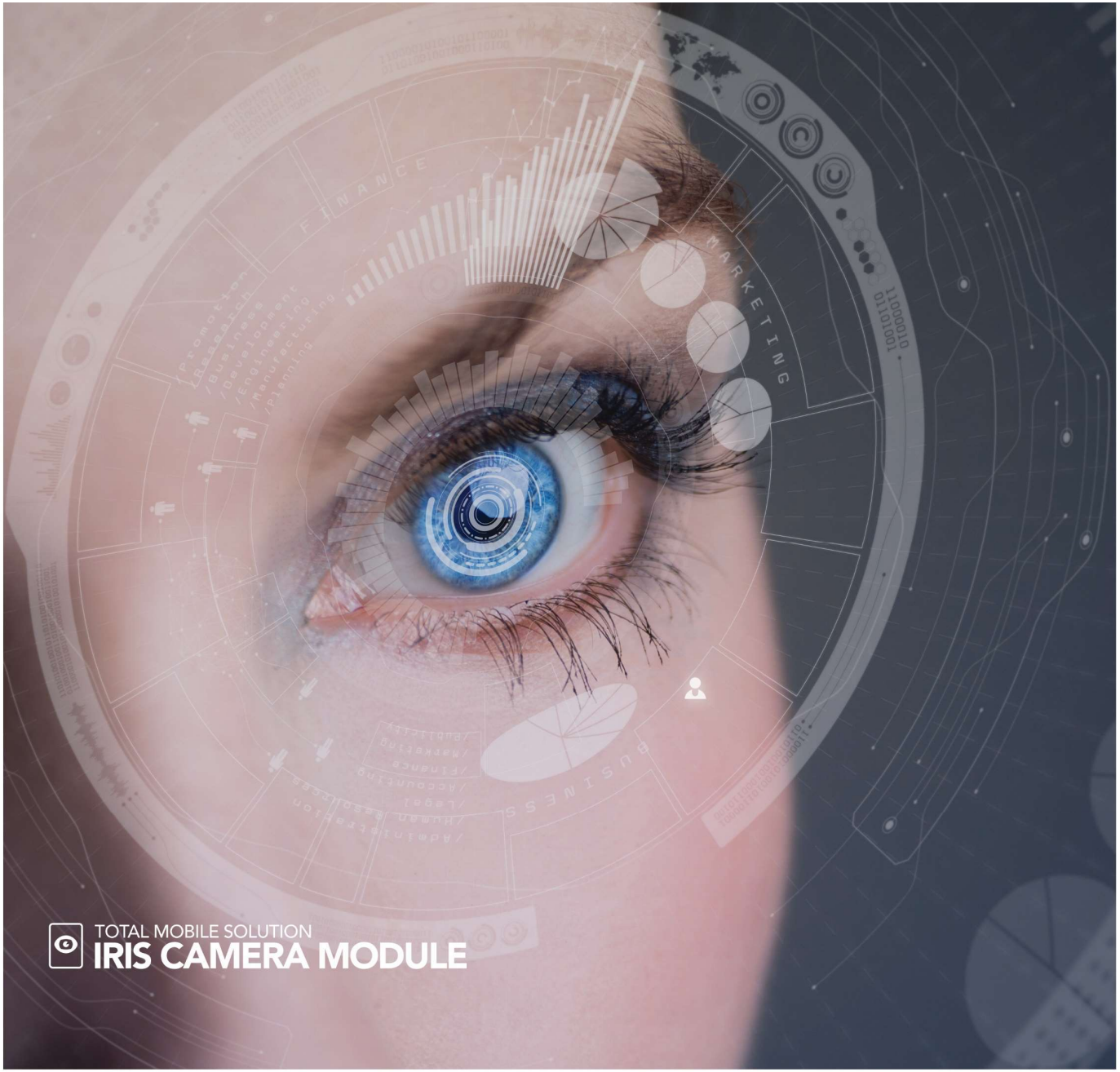
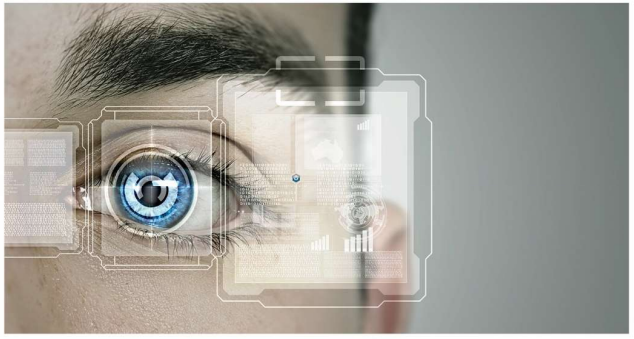
IRIS camera



IRIS CAMERA MODULE

FEATURES
Optimized Solution for “ALL EYE COLOR”
Applied IR-LED & Band pass filter of 810nm wavelength range
Running VT / IRIS Camera via Switching function
High recognition rate regardless of light from indoor-outdoor
HIGH SECURITY / HIGH RECOGNITION RATE
Unable to forge / falsify using photo, video, etc
Low rate of error recognition
Impossible to find same patterned iris
After infancy, iris is no longer changed

SMART SECURITY



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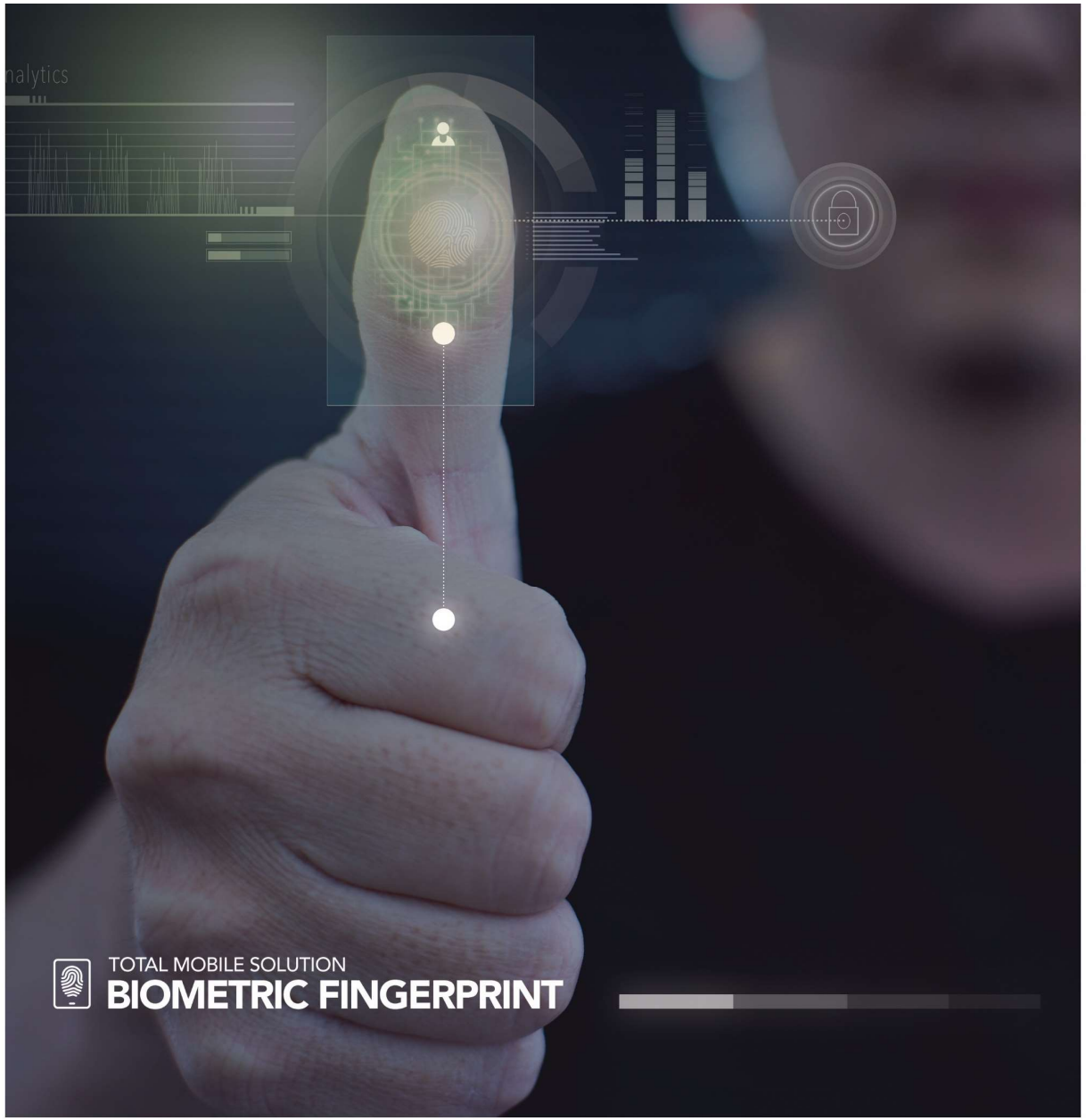
Capacitance Fingerprint module



WHAT'S BIOMETRIC FINGERPRINT TECHNOLOGY?
Take a fingerprint digital image by specialized sensor to identify user
Classify capacitive overlay / optical mode / ultrasonic sensor

BIOMETRIC FINGERPRINT MODULE STRENGTHS
Fast recognition speed
High recognition rate (less than 0.002% error rate)
Easy to miniaturize (can be applied to various applications)

VARIOUS APPLICATIONS OF BFM (BIOMETRIC FINGERPRINT MODULE)
Mobile & PC (smart phone)/Laptop
Automotive
Security devices (smart card/ private device/ door lock/ USB)

MCNEX STRONG POINT

DEVELOPMENT ABILITY	MANUFACTURING ENVIRONMENT
Well-experienced engineers	Clean environment construction (1,000 CLASS CLEAN ROOM)
Excellent development ability in H/W	
Excellent development ability in instrument	Automatic technology (Package assemble process automation)
SW F/U	
Quick action on client's model development	Mass-production ability (various factories overseas)

MANUFACTURING TECHNOLOGY
SPECIAL COATING technology (NON-SPRAY COATING)
WIRE BONDING technology for Low Loop control
Specialized process for fingerprint sensor module
Great package processing and internalized package

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Optical Fingerprint module

OPTICAL FINGERPRINT SENSING MODULE

WHAT IS OPTICAL FINGERPRINT SENSING TECH?

RECOGNIZING FINGERPRINT BY EMBEDDED CAMERA MODULE

STRONG POINT

HIGH VISIVILITY BY IN-DISPLAY TYPE

INSTINTIVE USAGE (DIRECT TOUCH TYPE TO OLED PANEL)

HIGHER RESOLUTION THAN CAPACITANCE TYPE: 750 Dpi

NO EFFECT TO OLED YIELD BECAUSE MODULE IS NOT CONTACT TO A PANEL.

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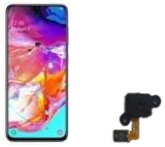
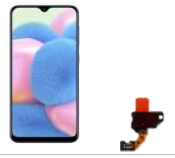
Biometric sensing products

Fingerprint scanning / Iris Recognition Module

APPLICATION		CUSTOMER	Applied phone model			
Fingerprint Recognition	Capacitance	SAMSUNG ELECTRONICS, KYOCERA, SHARP, FUJITSU				
			Galaxy J6	Galaxy A5 (2018)	Galaxy S9 / S9+	Galaxy Note9
			Galaxy A8S	Galaxy S10e	Galaxy M30(2019)	Galaxy A31
	FOD (Optical)					
			Galaxy A70	Galaxy A50	Galaxy A30s	Galaxy A51
Iris Recognition		SAMSUNG ELECTRONICS				
			Galaxy NOTE7	Galaxy S8	Galaxy NOTE8	Galaxy A41

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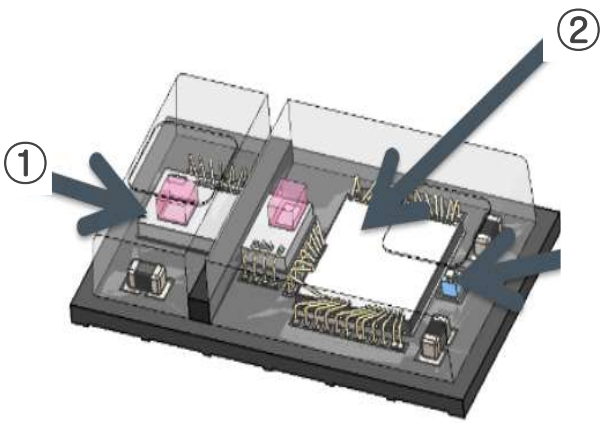
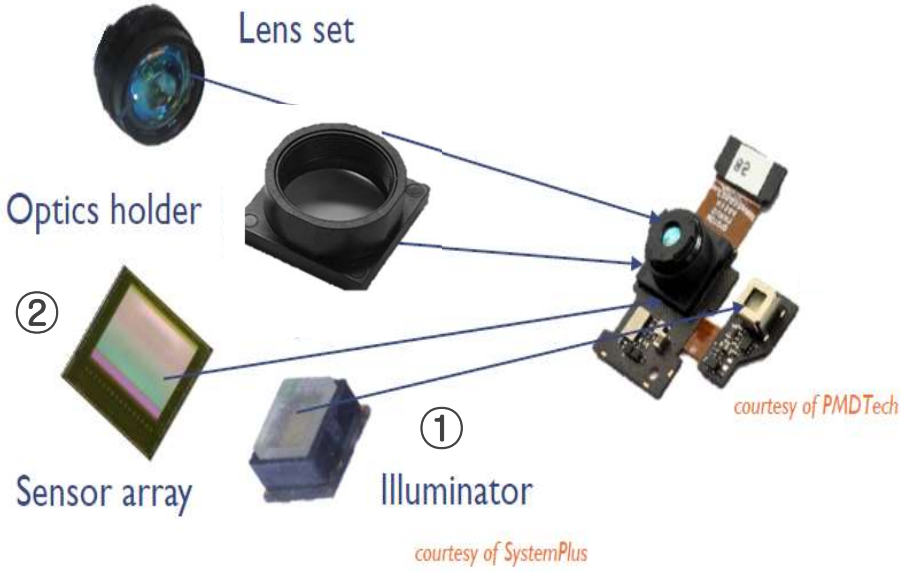
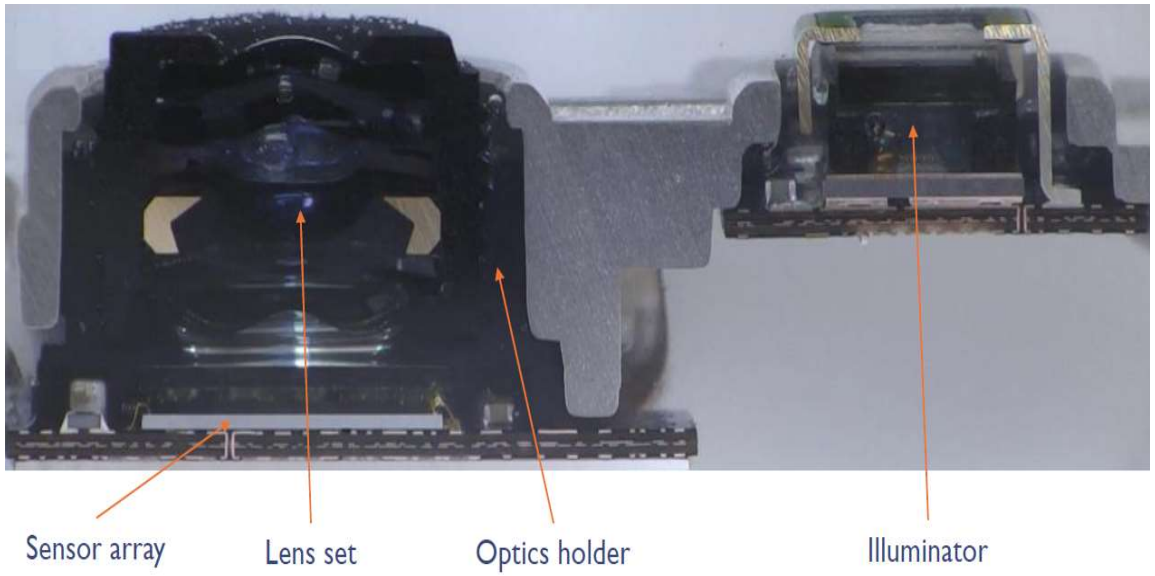
New technology: TOF Camera





Item	Description
1	Laser Illuminator This surface emitting laser diode provides the high-speed modulated signal that lights up the target at the invisible wavelength
2	Time-of-Flight Pixel The reflected light is captured and demodulated on the pixel. Several dedicated sensor areas allow to optimize the module performance to the specific sensing task.

[TOF Module Structure]



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New Technology : Facial Authentication camera

FACIAL RECOGNITION SYSTEM

Facial recognition is a technology which is capable of identifying or verifying a personnel face from a digital camera image.

3D facial recognition is more accurate in comparison to 2D facial recognition

3D facial recognition is to reduce errors on 2D facial recognition algorithm such as difference in light, head direction, facial expression, cosmetic face, etc.

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BUSINESS AREA

AUTOMOTIVE SOLUTION

As creative pioneer, leading innovation and technology by continuous research & development create safe and convenient world that everyone dreams of

IN-CABIN SYSTEM

DSM CAMERA
EYE-TRACKING SYSTEM
FINGERPRINT SENSING SYSTEM
DVRS(DASHCAM) SYSTEM
GESTURE CAMERA

OUT-CABIN SYSTEM

360 DEGREE CAMERA
SVM CAMERA
CMS SYSTEM
SRM / BVM SYSTEM

AUTONOMOUS DRIVING SYSTEM

MFC / STEREO CAMERA
TRI-FOCAL CAMERA
MOD CAMERA

ADVANCED DRIVER ASSISTANCE SYSTEM BY **MCNEX**

MCNEX ADAS is developing a various sensing technology which enhance safety and convenience to both driver and pedestrians

HYUNDAI KIA MOTORS	PSA PEUGEOT CITROEN	VOLVO	GEELY
35 VEHICLE MODEL	18 VEHICLE MODEL	2 VEHICLE MODEL	5 VEHICLE MODEL
GENESIS G70	GENESIS EQ900	IG GRANDEUR	K9

TOTAL 820 CAMERA MODELS **ANNUAL SHIPPING 4.0MIL MODULES**

820 MODEL CAMERA MODULES DEVELOPMENT (SUPPLYING FOR ALL PREMIUM VEHICLES IN HYUNDAI, KIA)

MILITARY VEHICLE HEAVY EQUIPMENT

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Outlook of automotive camera application

820 MODEL CAMERA MODULE DEVELOPMENT (Supplying for all Premium Vehicles of Hyundai/Kia

HYUNDAI KIA MOTORS	PSA PEUGEOT CITROËN	GEELY		DOOSAN
35 VEHICLE MODEL	18 VEHICLE MODEL	5 VEHICLE MODEL	4 VEHICLE MODEL	2 VEHICLE MODEL

THE NEW GRANDEUR

GENESIS G80

GENESIS G90

KIA K9

NEW CANNIBAL

TOTAL 820 CAMERA MODELS **ANNUAL SHIPPING 4.0MIL MODULES**

820 MODEL CAMERA MODULES DEVELOPMENT (SUPPLYING FOR ALL PREMIUM VEHICLES IN HYUNDAI, KIA)

MILITARY VEHICLE

HEAVY EQUIPMENT

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Automotive camera line up

820 MODEL CAMERA MODULE DEVELOPMENT (Supplying for all Premium Vehicles of Hyundai/Kia

HYUNDAI KIA MOTORS 35 vehicles | PSA PEUGEOT CITROËN 18 vehicles | GEELY 5 vehicles | 4 vehicles | DOOSAN 2 vehicles

Car	Model Name	Spec	Rear Camera	DVRS Camera	SVM Camera
	GENESIS G80 2020.02	ETHERNET SVM			
	SORENTO MQ4 2020.02	POC SVM, RVM			
	GENESIS GV80 2019.11	ETHERNET SVM			
	K5 DL3 2019.11	POC SVM, RVM			
	GRANDEUR IG FL 2019.11	POC SVM, RVM			
	MOHAVE HMPE2 2019.9	MEGA SVM			
	SELTOS SP2 2019.07	VGA, MEGA RVM			
	SONATA DN8 2019.3	POC SVM, RVM			

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Automotive camera line up

820 MODEL CAMERA MODULE DEVELOPMENT (Supplying for all Premium Vehicles of Hyundai/Kia

HYUNDAI KIA MOTORS 35 vehicles | PSA PEUGEOT CITROËN 18 vehicles | GEELY 5 vehicles | 4 vehicles | DOOSAN 2 vehicles

Car	Model Name	Spec	Rear Camera	SVM Camera
	GEELY JIAJI	POC SVM, RVM		
	GEELY BOYUE	POC SVM, RVM		
	PEUGEOT308GTI	POC RVM		
	RSM QM3	POC RVM		
	RSM XM3	POC RVM		
	DX55 ACE	POC SVM		

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MCNEX owned technology for Autonomous driving

- Korea 1st production: MEGA AVM / LVDS Camera
- Applying to all kinds of camera application like front/back-up camera, dashcam camera, security camera , etc.
- Obtaining next cash-cow technologies through ADAS and advanced automotive technologies.

AVM system: G90 / G80 / K9 /Cannibal

4ea of 360° cameras	LDWS

Full auto parking assistance

One button parking

Fingerprint Verification

Identify the Driver

Back-up camera

Distinguish object at the back & Assist parking

MOD camera (Motion Object Detection)

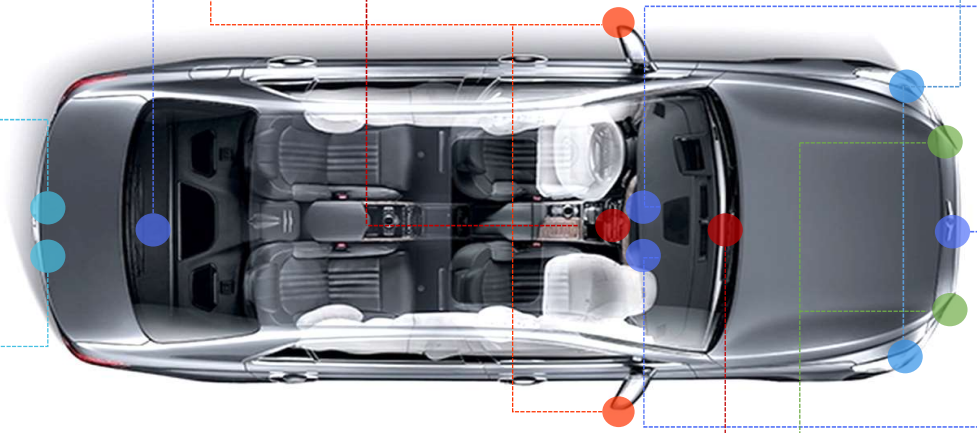
Detect motions

LDWS

Lane Departure Warning System

Bind spot warning

Alarming a car in blind spot



Side camera

Image display as per turn signal detection

NIGHT VISION

Detecting a human or an animal by Infrared camera

Stereo / Lidar camera system

Recognize and measure the distance at the front

Front camera

Recognize object at the front, then inform the Driver

DRIVER STATUS MONITORING

Detect the drowsing Driver

ADVANCED DRIVING ASSISTANCE SYSTEM

LDWS (Lane Departure Warning System), FCWS (Forward Collision Warning System), Bind Spot Detection, Automatic emergency brake system, Detecting object and pedestrian, Night Vision, etc. Developing the promising futuristic technology, autonomous vehicle core solution

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Smart car system

Smart Car Image System

SMART ”B” (AI) Camera

Multi-View, Front 360˚ AVM Monitoring, Auto-Parking Function

CAN Communication Camera

ECU & CAN

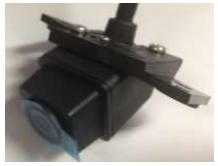
LDWS Camera

Lane Departure Warning System

DSM Camera

Driver Monitoring

Laser Welding Camera



Extreme Waterproof Structure

HD AVM Camera

6Ch Around View Monitoring

Biometrics

Iris pattern / fingerprint

Tactical Warfare Vehicle Camera

Military Vehicle

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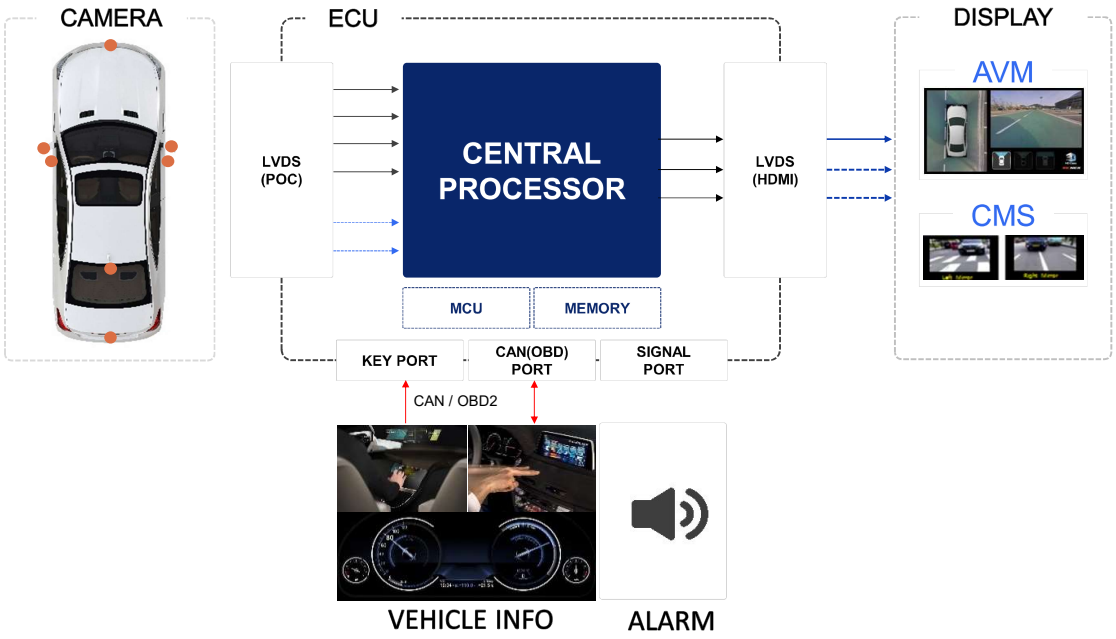
"Parking / Driving Master Assistance Service"

- Parking assistance through combined image
- Side & rear camera monitoring through room mirror
- Blind spot alert
- Lane departure warning

BLOCK DESIGN



VIEW DESIGN

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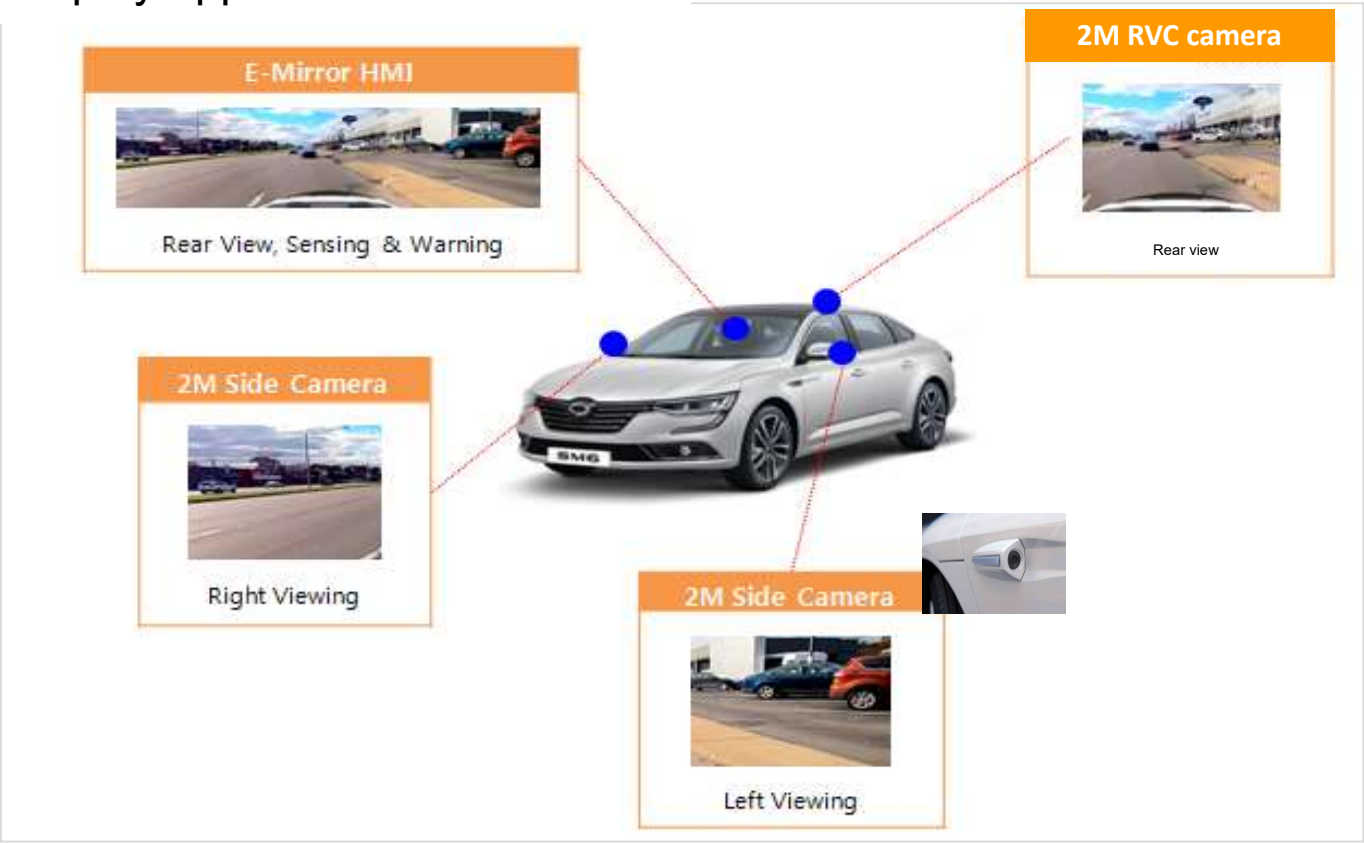
Smart Room Mirror system

Camera Monitor Systems

Object Detection (~ 100m)

Display applicable OLED

Promoting to Harman, Mobis, Hyundai/Kia



▶ Specification

- FHD, 60 fps, Auto grade
- Wide angle for minimizing Blind spot
- Better productivity and additional functions (pedestrian, vehicle, 2wheel vehicle detect)
- Viewing+ Sensing function

<Panorama View>

<Parking View>

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Built-in DVRS Camera

Promoted to Tier 1 vendor for a DVRS camera.

- Driving Recording
- Saving In-Cabin Communication data
- Passed Vehicle Environmental Reliability Test,

EMI/EMC Reliability test

Items	Front Camera
Resolution	1920 x 1080p 30 FPS
Output Data	Single Output LVDS
Operating Voltage	DC 7.5 V ± 0.5 V
Operating Temperature	-30 ℃ ~ 105 ℃
Optical Format	1/2.9 inch
HFoV	114 ˚

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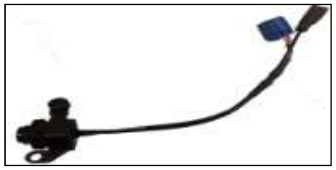
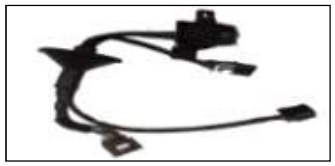
Ethernet camera

Developed and Shipped Ethernet camera to Hyundai motor first in Korea.





All Genesis vehicles are used Ethernet camera. (G70, G80, GV70, GV80)

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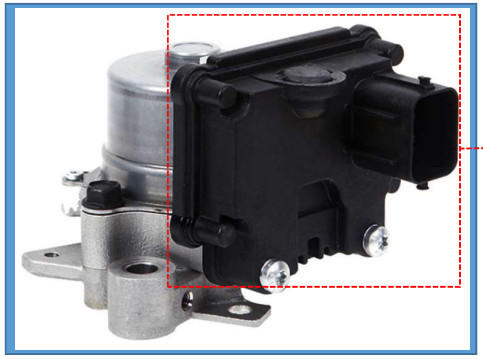
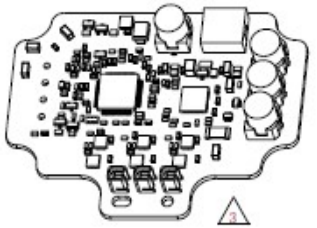
Camera for EV application

Electric Vehicle camera application: SVM (Surround View Monitoring) camera & RVM (Rear View Monitoring) Camera

SOP: Jan 2021





EMS of Controller PCB ASSY

EMS business: PCB Assembly of EOP(Electric Oil Pump), EWP(Electric Water Pump) controller.

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Biometric sensing solution

Biometric Fingerprint sensing Module (Contact Type)

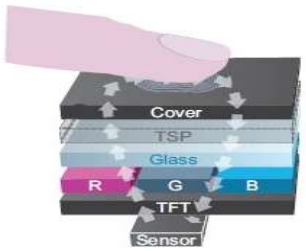
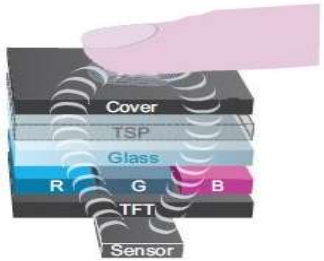
Product Type / Market Changes

- Capacitor Sensor Type (Capacitance type – Current type)

■ MCNEX CAPA : 5M/M

- Various Color with applicable to any locations
- Post Process method
  - Film Coating, Spray, UVT Method

- In-display Type : Market Change to Optical Type

	Optical	Ultrasonic wave type
Image		
Type	Detecting fingerprint by optic	Scanning the skin layers by an ultrasonic wave
Sensor Location	Under Display	Under Display
Advantage	Durability	Accuracy, Durability
Status	Developed By MCNEX	-

Application

- Car security / Card

- Various application
  - Car Start key, Payment

Driver recognition part

Fingerprint Sensing module

(Car Smart Key)

(Vehicle Door, In-Cabin Security)

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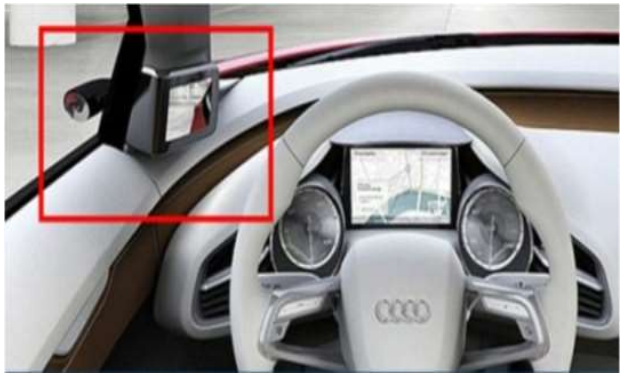
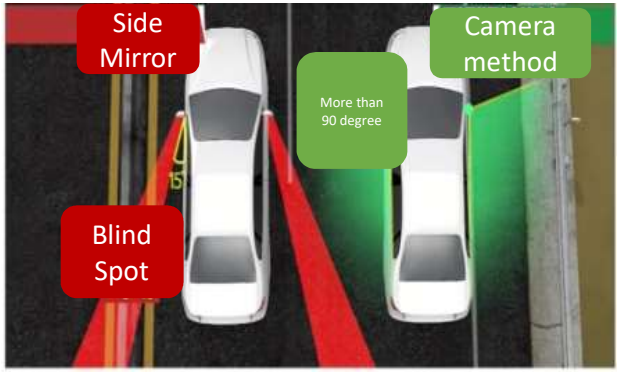
Mirrorless Camera Replacing Side-mirror – Developing & Promoting

"Prospecting to increase market demand "

- Approved to use mirrorless camera by UN Vehicle Standard World Forum (WP.29) in November 2015
- Allowed to install mirrorless camera by Japanese Ministry of Land, Transport and Tourism in June 2016
- Pre-announcement of legislation to install mirrorless camera by Korean Ministry of Land, Infrastructure and Transport.





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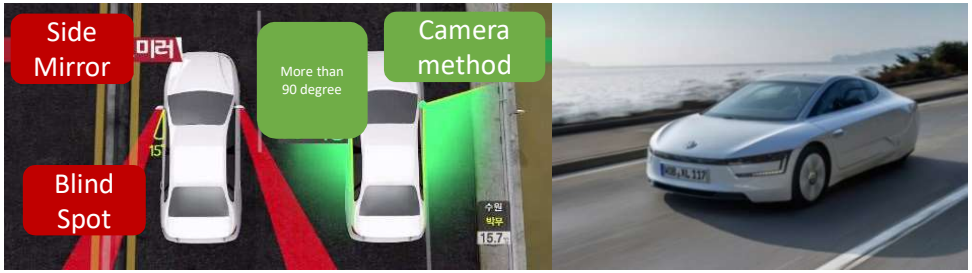
New tech – CMS (Camera Monitoring System) Mirrorless camera

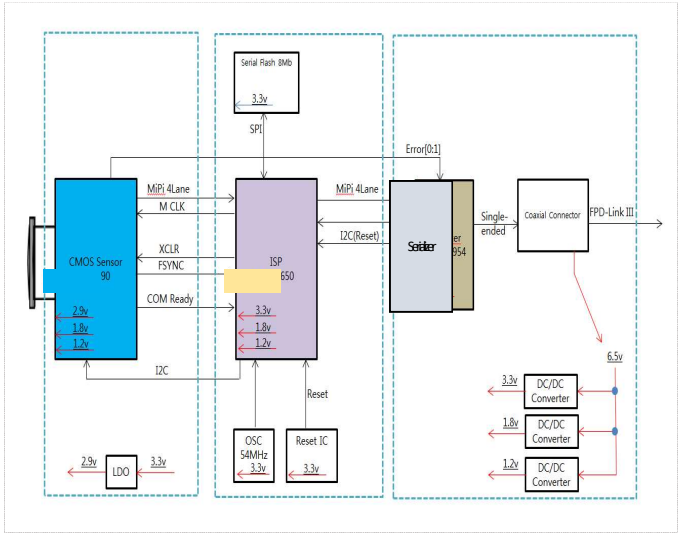
"Mirrorless camera demand is increasing"

- Parking assistance through combined image
- Side & rear camera monitoring through room mirror
- Blind spot alert
- Lane departure warning

SYSTEM CONCEPT



BLOCK DIAGRAM



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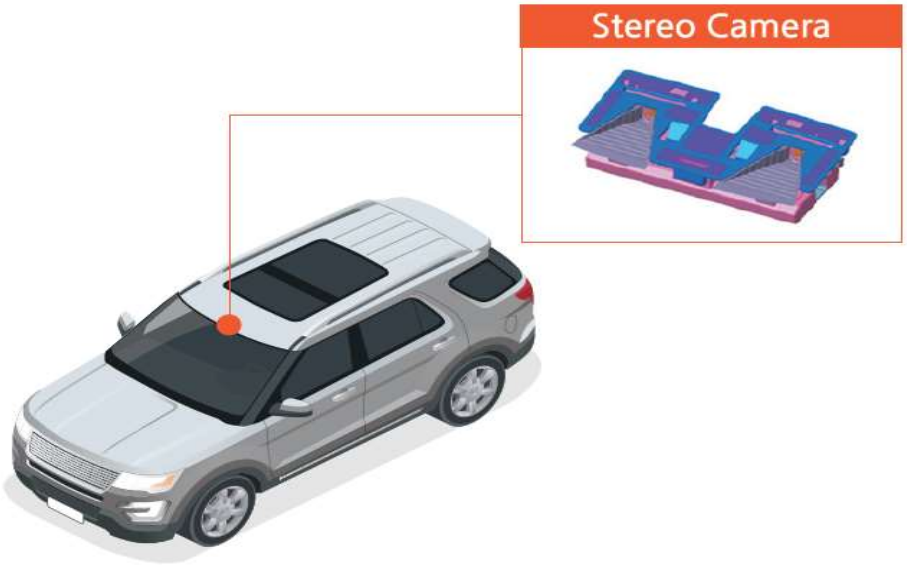
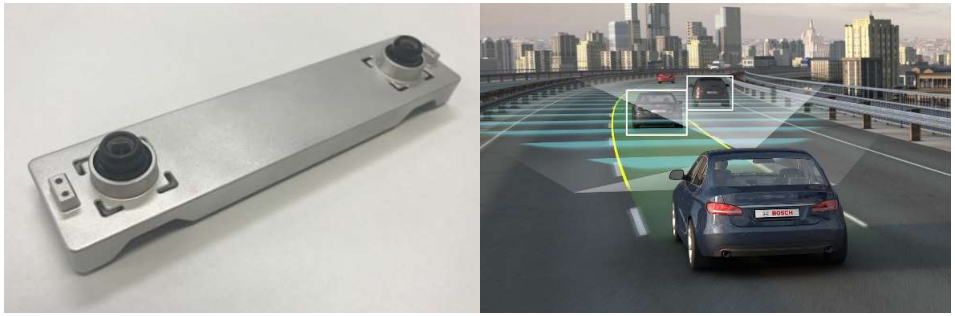
New tech – Stereo camera

Stereo Camera



Category	Item	Specification
Camera	Camera	HD CMOS
	Sensor Format	1/3 inch
	Resolution	1280*672 @60fps
	Pixel Size	3.75um * 3.75um
	Fov(H)	52°
	LENS F-Number	F2.0
	Video output	YUV422 1280*672@60fps
	View mode	Front view



Main Function

- Lane Departure Warning System
- Lane Keeping Assist System
- Front Collision Warning System
- Autonomous Emergency Braking System
- Vehicle and pedestrian detections
- Object Detection and distance calculation

Advantages

- **Support depth of the front object extracted by using two cameras.**
- **Object recognition and distance measurement over 20 meters ahead.**
- **Recognizes various type of object such as pedestrians, vehicles and motorbikes.**

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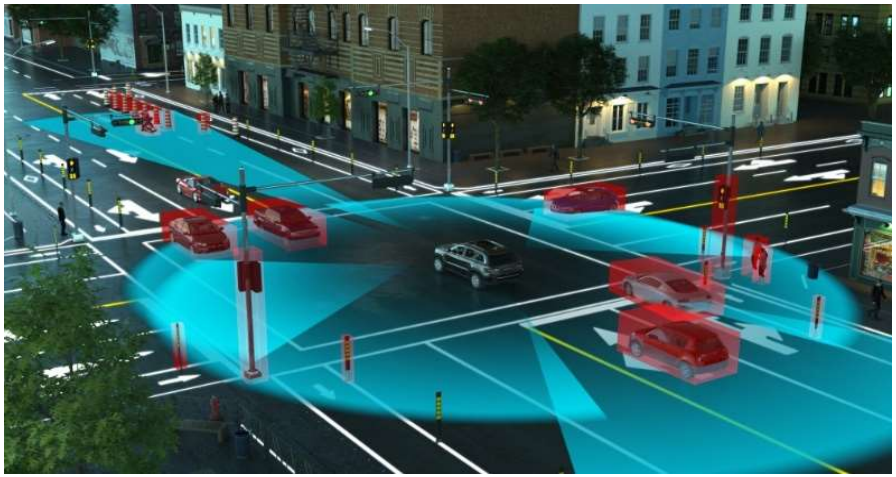
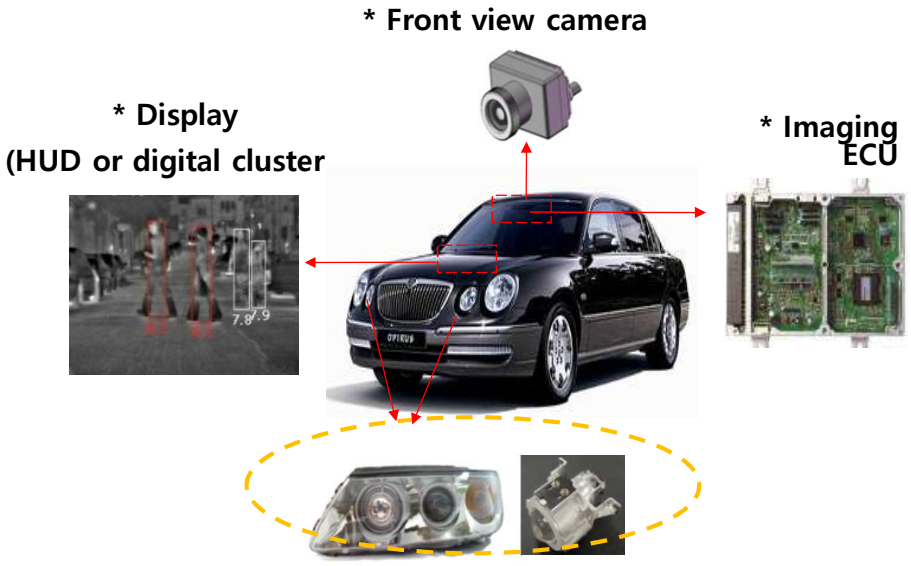
New tech – Night Vision camera





[Night vision system]

		Specification
Camera Performance	Image sensor	MLX75411
	Optical Format	1/4 inch
	Resolution	1024(H) x 512(V)
	View angle	D 20 ˚(H 16)
	Lens construction	4~5 Glass, Visual/IR Pass (IP pass band: 800~1000nm)
	Module size	31mmx16mmx25mm (W x H x D)
ECU performance	Detectable distance	3 ~ 150m
	Warning	Present and warn pedestrians or vehicles ahead
	ECU housing	Fix both of camera and ECU
Applications (Purposes)		Vehicle, Security, Military, Drone,

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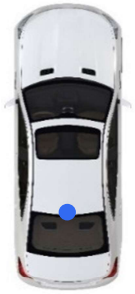
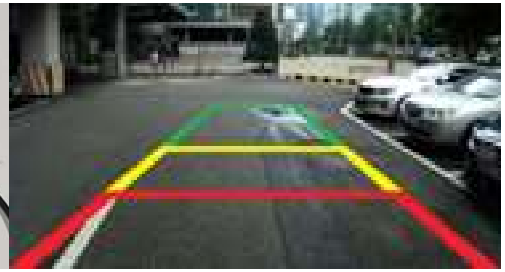
New tech – Shark antenna camera

EXTERIOR DESIGN





FEATURES

ITEMS	SPECIFICATION
Input voltage	4V~36V
Temperature	-40°~85°(operating), -55°~105°(storage)
Start time	≤ 2.5Sec
Output resolution	1280 x 720 @ 60fps
Field of View	Horizontal 140±3°, Vertical 85±3°
Output Format	POC

SYSTEM APPROACH

- Rear View Camera
- Parking Guide Line
- Rear Moving Object Detection

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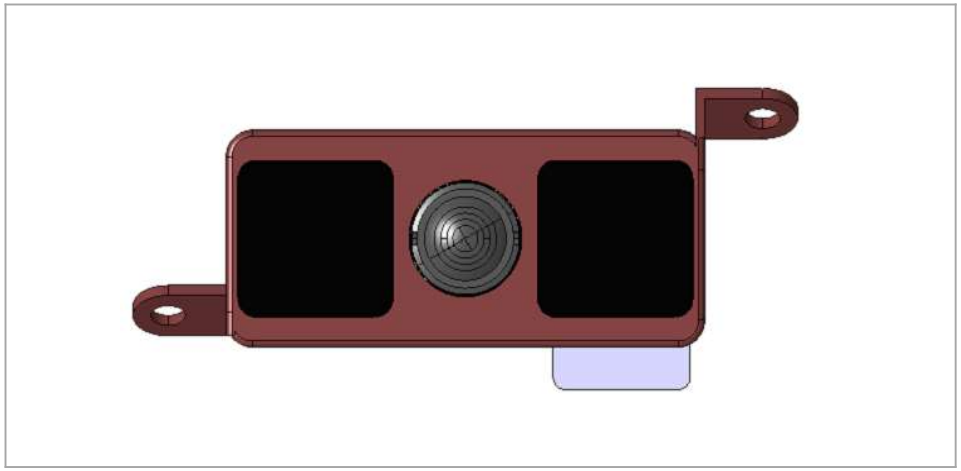
New tech – In cabin camera (RGB/IR camera)

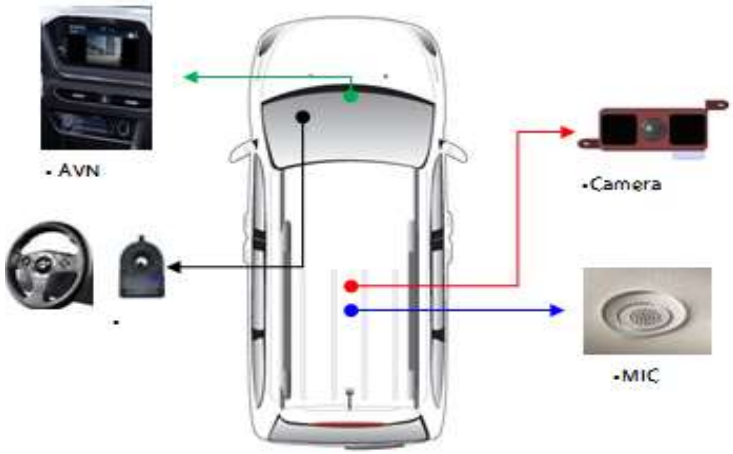
Design



Features

Items	RGB-IR Camera
Sensor	1MEGA(RGB-IR)
Output Data	POC
Resolution	1280 x 720p
IR LED	940nm
Operating Voltage	DC 12 V ± 0.5 V

System Configuration



System Approach

Interior Monitoring Camera System

<Monitoring >

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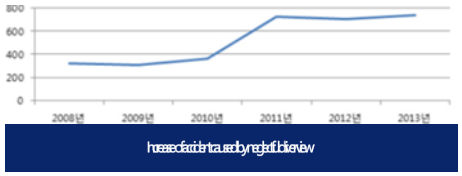
New tech - Gesture camera system

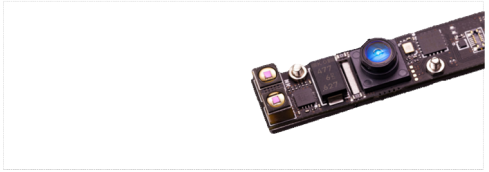
Maximizing Driving Convenience

"GESTURE CAMERA SYSTEM"



Increase Driving Convenience

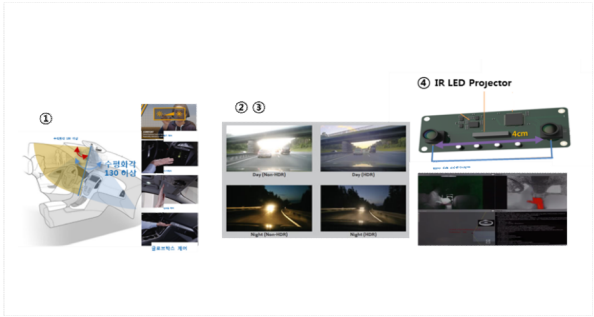
+

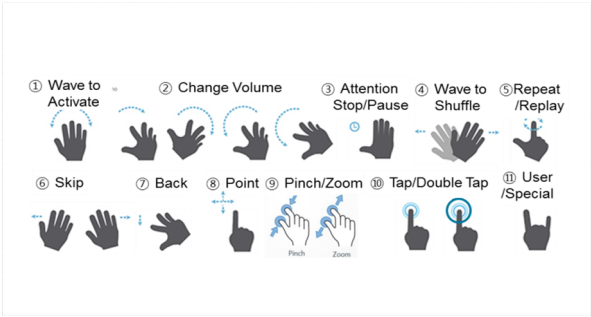


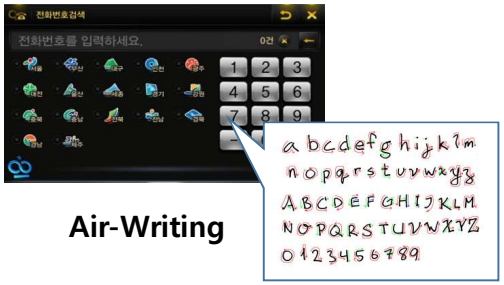
- MCNEX Gesture Camera-

- 130 ~ 180˚ HD Camera,
- Vehicle system control within 1M distance
- High accuracy at night & low light condition

SYSTEM CONCEPT







Air-Writing

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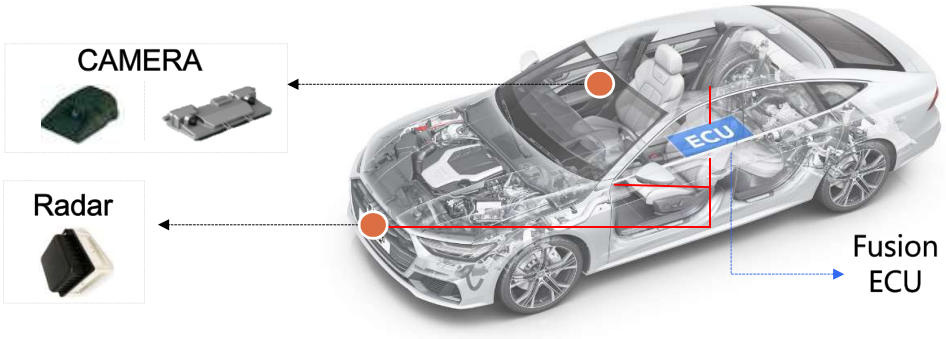
New tech – Low level Radar & Image fusion system

Complying with EURO NCAP 2020

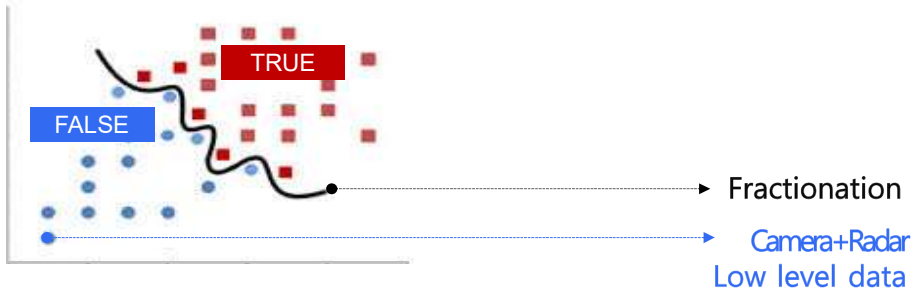
"Fusion Sensing System"

SYSTEM CONCEPT

- System -



- LOW LEVEL FUSION -



FEATURES

ITEMS	FEATURE
Camera	Stereo Camera
Resolution	1M(HD) @ 60 FPS
Function	Pedestrian Detection (40m) Vehicle Detection (150m) Cyclist Detection (40m) Lane Detection

SYSTEM APROACH

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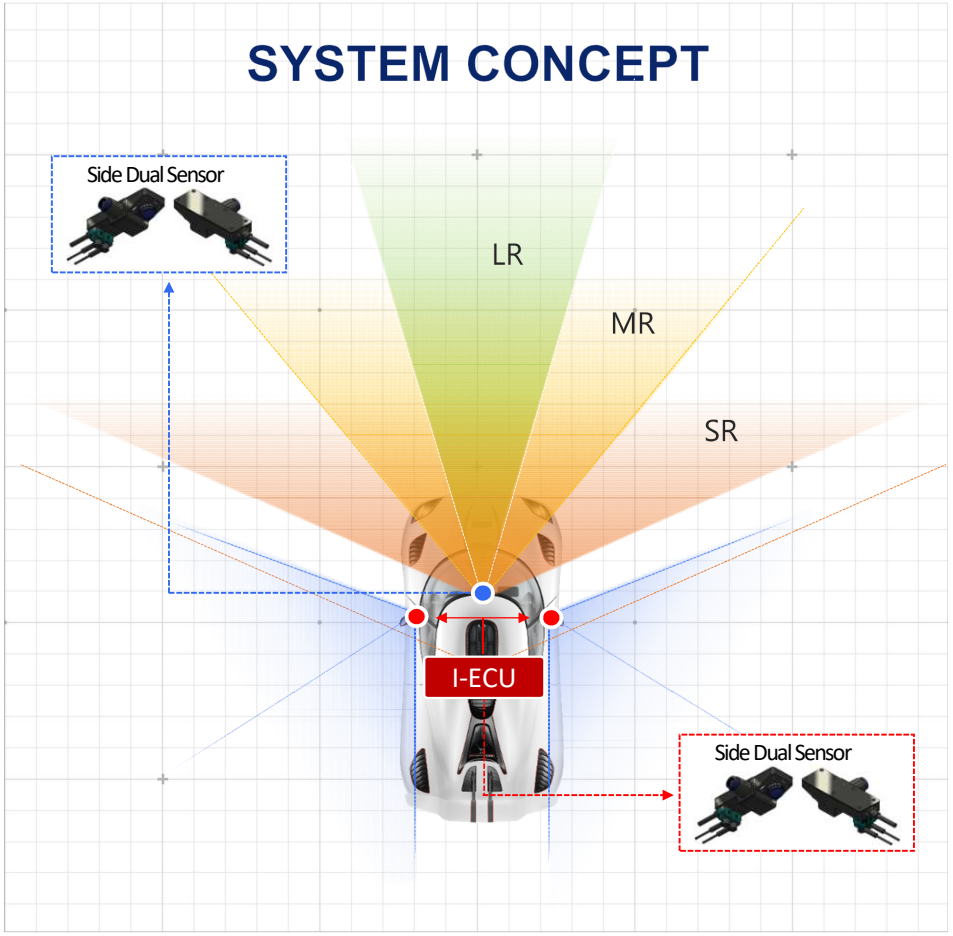
New tech - Omni-directional Image Sensing system

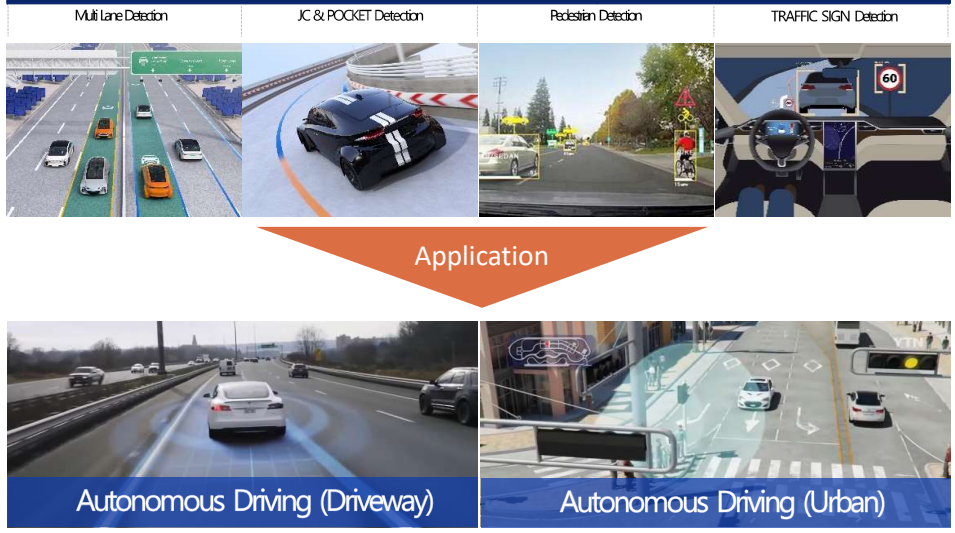
Solution for Automation Level 3

“Omni-directional Image Sensing System”



ITEMS	FEATURE	
Camera	Tri-focal (120, 60, 30)	Side-dual (100)
Resolution	2M(FHD) @ 60 FPS	
Front Function	Pedestrian Detection	Vehicle Detection
	Cyclist Detection	Lane Detection
	Traffic light Recognition	
	Pedestrian Detection	Vehicle Detection

SYSTEM APPROACH



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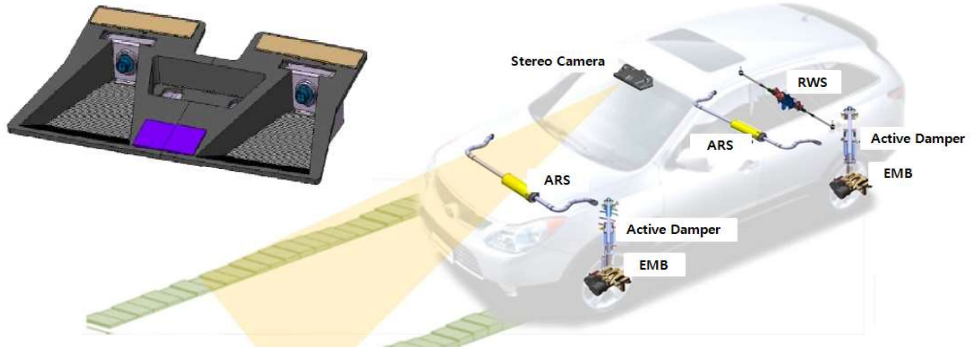
ROAD PREVIEW Sensor/Active Chassis Control System

Solution to improve Riding quality & Driving safety

"ROAD PREVIEW SENSOR"



ITEMS	FEATURE
Resolution	1M(HD) @ 60fps
Detection Range	15m
Detection Speed	15fps
Obstacle	Speed Bump / Pot Hole
Feature	Detecting Stereo Depth Map basis / Road Grade and Curvature / Pot Hole

Chassis Control System	Yaw Control - RWS Front Steering Actuator Front ECU ② Main ECU R-EPS ① Rear Steering Actuator	Roll Control - ARS ③ECU ②ARS module ①ARS module	Vertical Control - Active Damper ①Shock absorber ③ECU ②Inverter
Stereo Camera System	Lane curve recognition	Grade	Rough road

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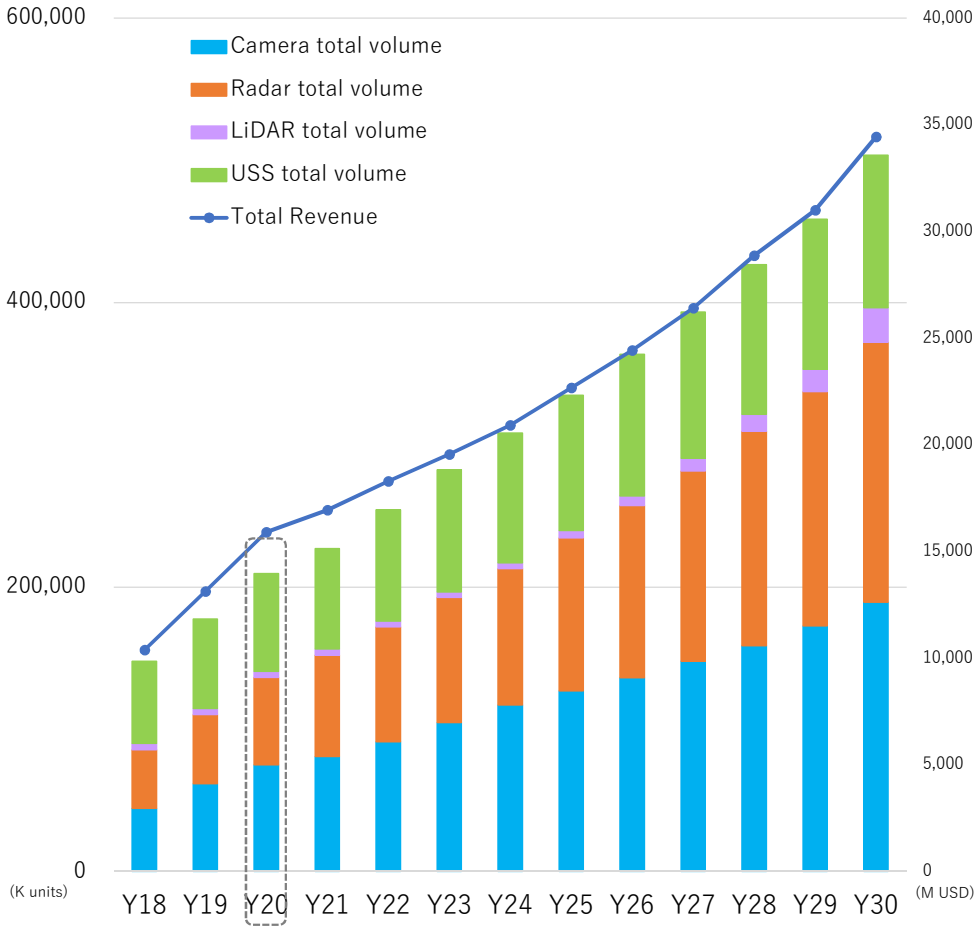
Market trend – ADAS

- Increased Market Size
- Camera Module 36%, Radar 33%, LiDAR 5%, Ultrasonic sensor 25%

Legalizing & Government supporting in US and Europe Region / Increasing demand of Automotive Camera

Worldwide Forecasting of ADAS Sensing Camera & Other sensor markets



TSR report: Autonomous Sensing system market analysis 2019

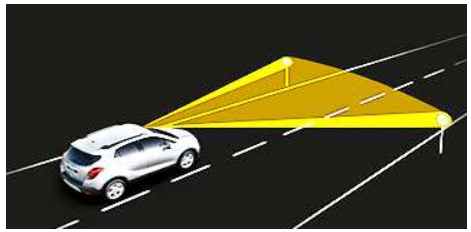
Change of Worldwide Safety Policy (US, Europe)

- US market– Mandatory of Backup Camera (May.1.2018~)
- Europe market– Increasing of Importance of ADAS Camera Increasing ADAS Camera Application and Demand

- **2014'**: Radar and AEB (Autonomous emergency Breaking)

- **2016'~2018'**: AEB and LDW (Lane Departure Warning)

- **2016'**: TSR(Traffic Signal Detection), LKA (Lane Keeping Assist)



- **2018'**: Night Vision and mirrorless Camera System

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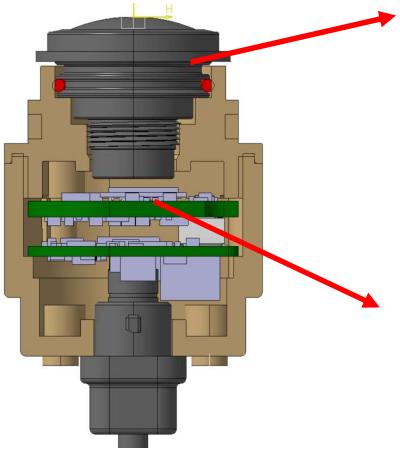
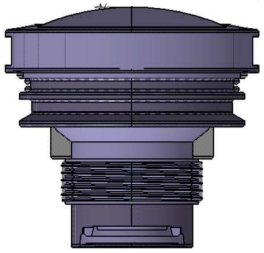
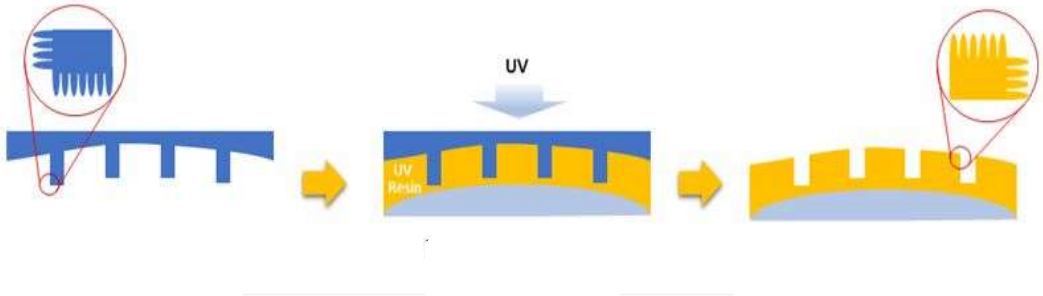
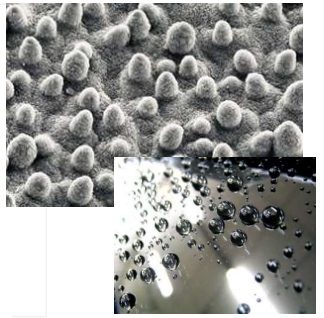
New tech – Nano coating lens package solution

Nano Tech HDR CoB Camera Construction

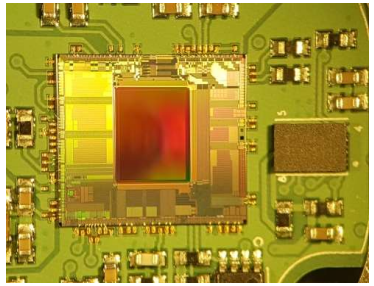


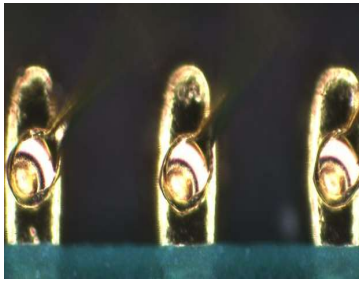


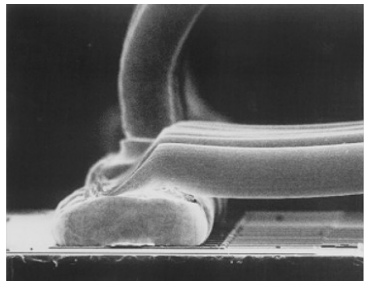




COB (Chip On Board)

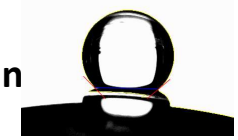






High Gain CoB Camera Feature

- **Increased Dynamic Range more than 6%**
- **Nano Structure Lens + CoB HD/FHD Sensor**
- **Nano Coated Lens : Anti Reflection/ Super-Hydrophobic Water Repellen**
- **Light Transmission Ratio : 99.5%**
- **Water Repellent : 30% better than normal Coated**
- **Automotive Reliability Standard Abrasive Test Qualified**
- **5 Patents Applied**
- **A EC-Q100 Qualified**



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Summary of government project

MCNEX
Multimedia Core of the Next...

Project Name	Development of Front and Side Image sensor module for autonomous vehicle - Developing Ultra High Definition Camera Module Technology for Robust Detection of Lane, Traffic Sign, Vehicle, Animal, Road Obstacle, etc.

- **Period: May.2017~Dec.2021 (56 months) / Government Funding: $15.8M / Enterprise investing : $8.4M / Total: $24.2M**
- **Image Sensing Solution among the 9 core solutions of autonomous driving**
- **Primary Company (Integrator) : MCNEX (Dong-Uk Min, President)**

Project

9 Core solutions & 2 systems

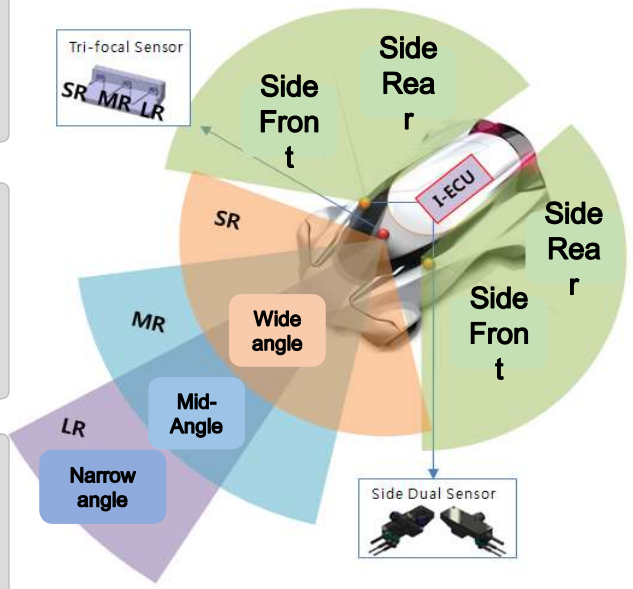
Image	Radar	LiDAR	HVI	Compositenes s	Digital map
ADR	V2X	DCU	System	Proof	

Main Feature

- ❑ Multi lane detection / assist to change the lane at intersect area
- ❑ Front & Side Image Sensor to Detect Moving Object (Vehicle, Pedestrian, two-wheeled vehicle, etc) and integrating to ECU
- ❑ Multi functioning Image Detecting Algorithm

Main Spec

- ❑Detecting Distance of Front Vehicle & Pedestrian : 150m / 70m
- ❑ Max Detecting Distance of Side Front & Side Rear : 80m / 100m
- ❑ Max Detecting Distance of Side Front Pedestrian : 60m



[Image Sensor Concept]

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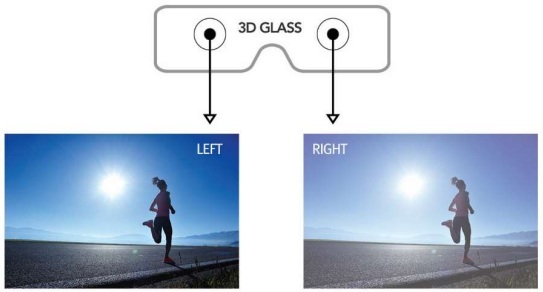
3D DEPTH CAMERA

2 cameras can be actuated by one controller. This controller can mix 3D image without any other software 2D or 3D is optional.



SIDE BY SIDE (SHUTTER GLASS) IMAGE

As displaying right&left frame side by side, open and close a crystal shutter side by side to balance both sides of the frame timing

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VR/AR camera

VR. AR CAMERA

Co-developed with Leapmotion, leading developer of gesture recognition s/w

VR CAMERA

intel | Qualcomm | LEAP MOTION

MODULE SIZE	105 X 10 X 6.5	PIXEL SIZE	1/4" CSP
RESOLUTION	1M	I/F	USB3.0 & MIPI
FOCUS TYPE	FIXED FOCUS	F#	2.0
VIEW ANGLE	180°	IR LED	850NM 150 °

AR CAMERA

AR CAMERA IMPLEMENTING INTO REAL LIFE

AR technology for game, entertainment, medical, sightseeing, manufacturing, construction, building, etc.. Easy to find a problem as using fluoroscophic technology applying ar technology.

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SMART GLASSES

HIGHLY SIMPLIFIED OPTIC STRUCTURE TO ENSURE

1. High efficiency of image data transmitting
2. Unique system lens to deliver 2D and 3D images
3. Lighter and smaller smart glass device

CENTER-MOUNTED OPTIC MODULE TO PROVIDE

1. Wider view angle compared to side-mounted ones
2. Unique system lens to deliver 2D and 3D images
3. Fit in any stylish design for any application

CENTER-MOUNTED OPTIC MODULE

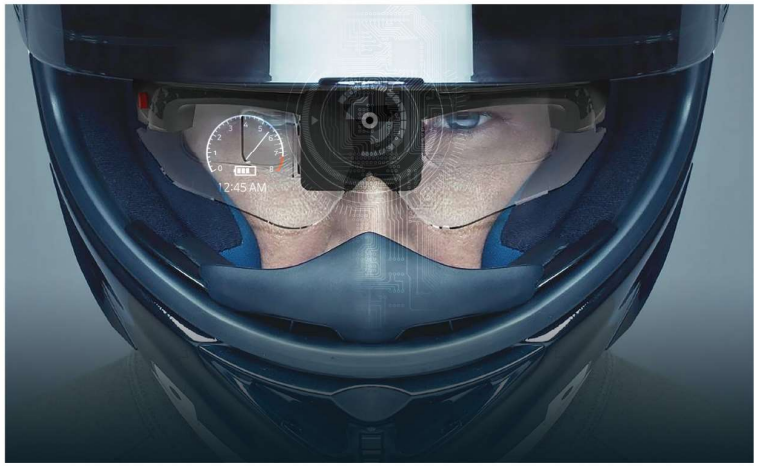
Our center-mounted optic module enables wide view angle for our glasses, solving one of the most difficult challenges faced by other smart glasses

Center-mounted optic module also allows us to design our glasses more stylish, compared to other models that are bulky and inconvenient to handle

BEST-IN-CLASS OPTIC DESIGN

Our patented technology enables us to use extremely thin beam splitter (2mm) as part of the optic module, making our glasses light weight and more comfortable to wear

Even with our minimum-sized optic module, the virtual images are created far enough from your eyes which makes refocusing of your eyesight unnecessary in order to view images



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BUSINESS AREA

SYSTEM SOLUTION

As creative pioneer, leading innovation and technology by continuous research & development, MCNEX creates safe and convenient world that everyone dreams of.

IOT BUSINESS SOLUTION

DASH CAM
NETWORK CAMERA
SMART MEDIA(SMART DID)
VR SOLUTION
AR SOLUTION
MR SOLUTION

MCNEX, with the technical convergence based on IOT, is leading the image system solution and connected future industry by continuous research and development in the fourth industrial revolution which focuses on turning the situation awareness into autonomous intelligence technology. MCNEX has been launching a number of products in CES which is being held in Las Vegas since 2015.

MCNEX will keep the continuous research and development with its products in order to create the world more convenient on a basis of convergent service.

CES BOOTH IN 2018

IMAGE SOLUTION
+
ICT

IOT
INTERNET OF THINGS

eyeCLON

MCNEX's core value is to let the world experiencing the best image system solution for more convenient world
Eyeclon is the brand made by MCNEX Co. Ltd. with the technical competence in the camera module industry.

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Security & IoT solution

eyeCLON

- Stabilizing system business through lineup of IP Camera and Driving Image Recorder
- Entering into New IoT industry as conversing IoT with IP Camera

IP CAMERA						
	WiFi CAMERA (2M)	WiFi CAMERA (2nd generation)		IoT NW CAMERA (Sensor interfacing control)		
DRIVING IMAGE RECORDER						
	2ch(FHD+HD), 4" Touch LCD	2ch(FHD+HD), LTE	2ch(FHD+FHD) 3.5" WiFi, ADAS	2ch(FHD+FHD) 3.5" Format-free, ADAS	2ch(HD+D1) 3.5" Format-free, ADAS	2ch(FHD+FHD) 3.5" wifi
WIRELESS POWER CHARGER						
	Mount type charger	OE type charger	Motion CAMERA	Face recognition Camera		

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DASH CAM

MCNEX, No.1 camera module technology in the Korean market, is the first company to launch LTE connected dashcam to deliver a driver a chance to monitor a vehicle status by a smart phone application with other functions such as ADAS for driver's safety.

IOT BASED LTE COMMUNICATION TYPE **DASH CAM L7PRIME**

LTE DASHCAM IMPLEMENTING **WORLD FIRST SOUND PRESSURE SECURITY TECHNOLOGY** FOR WARNING THEFT PROTECTION

INTRUDING PROTECTION	Detecting sound wave when intruding
THEFT PROTECTION	Warning when intruding into a car
ALRAMING CAR FIRE	Alarming when car is firing
IDENTIFYING PARKED LOCATION	Texting a parking location when parked
MANUAL RECORDING	Check the recorded video after manual recording by smart phone app.
DUAL BAND	LTE & WCDMA
CONTROLLING LOCATION/VIDEO/ STATUS	Check location and recorded video remotely

eyeCLON

TECHNOLOGY FOR PERFECTION
Harsh quality test (344 items) for making seamless qualified product

VALUE CREATING DESIGN
Stylish and simple UX design for combination of performance and convenience.

DASH CAM Stabilize a system division as full line-up of products.

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Network camera & Door sensor

NETWORK CAMERA . E3

Resolution: FHD (1920 x 1080)
Image sensor: Sony Exmor 1/2.9” 2M CMOS
Lens: F2.0, FOV 125°
Storage mode: Micro SD card/ Cloud
Wireless: Wifi 802.11 B/G/N (2.4GHz / 5.0GHz)

Night vision: True D/N filter (Max. 10m)
Motion detect
Door sensor
Two-way audio
Power: Micro USB-B type/ 5V/1.5A

Smart home IoT Full HD network camera + Door sensor

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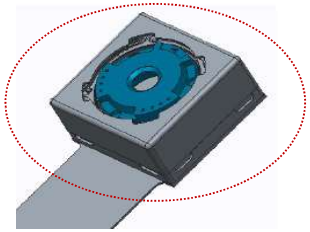
Multi Functional camera product

Dashcam + Action cam + Webcam

Implementing 2axis OIS tech



OIS/TILT

- 2axis (Pitch+Yaw) Stabilize Camera
- 48MP Image sensor

Product Design

- Shake less image recording
- Compact design with 4K,5K Encoding
- Water & dust proof (IP67)
- High capacity battery: over 4HR @ 1080P

Various application

Personal Mobility

Action cam

Web cam

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Smart DID (Digital Information Display)

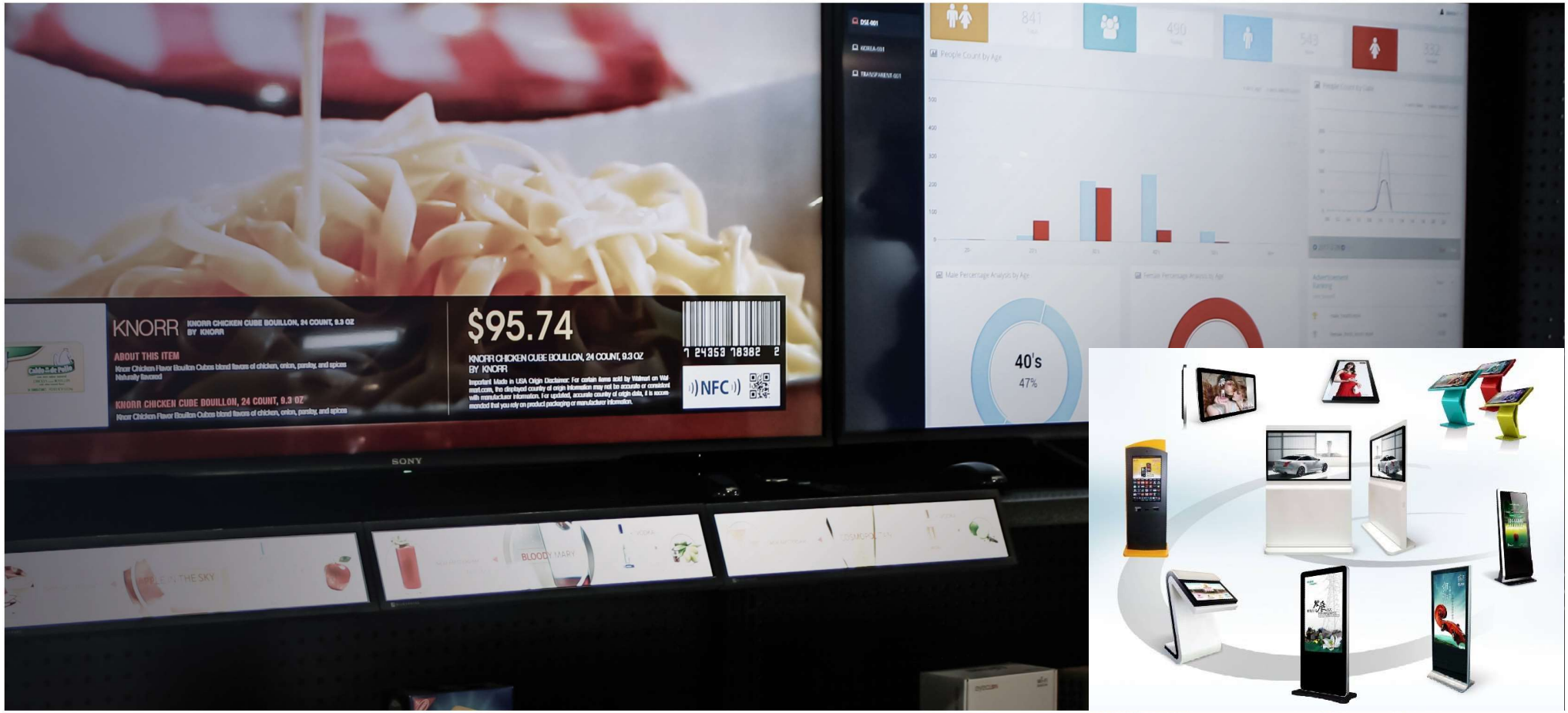
SYSTEM SOLUTION

SMART MEDIA

IOT. ICT

Collecting Information > Analyzing Information > Transferring Information

SMART DID | CES BOOTH IN 2018



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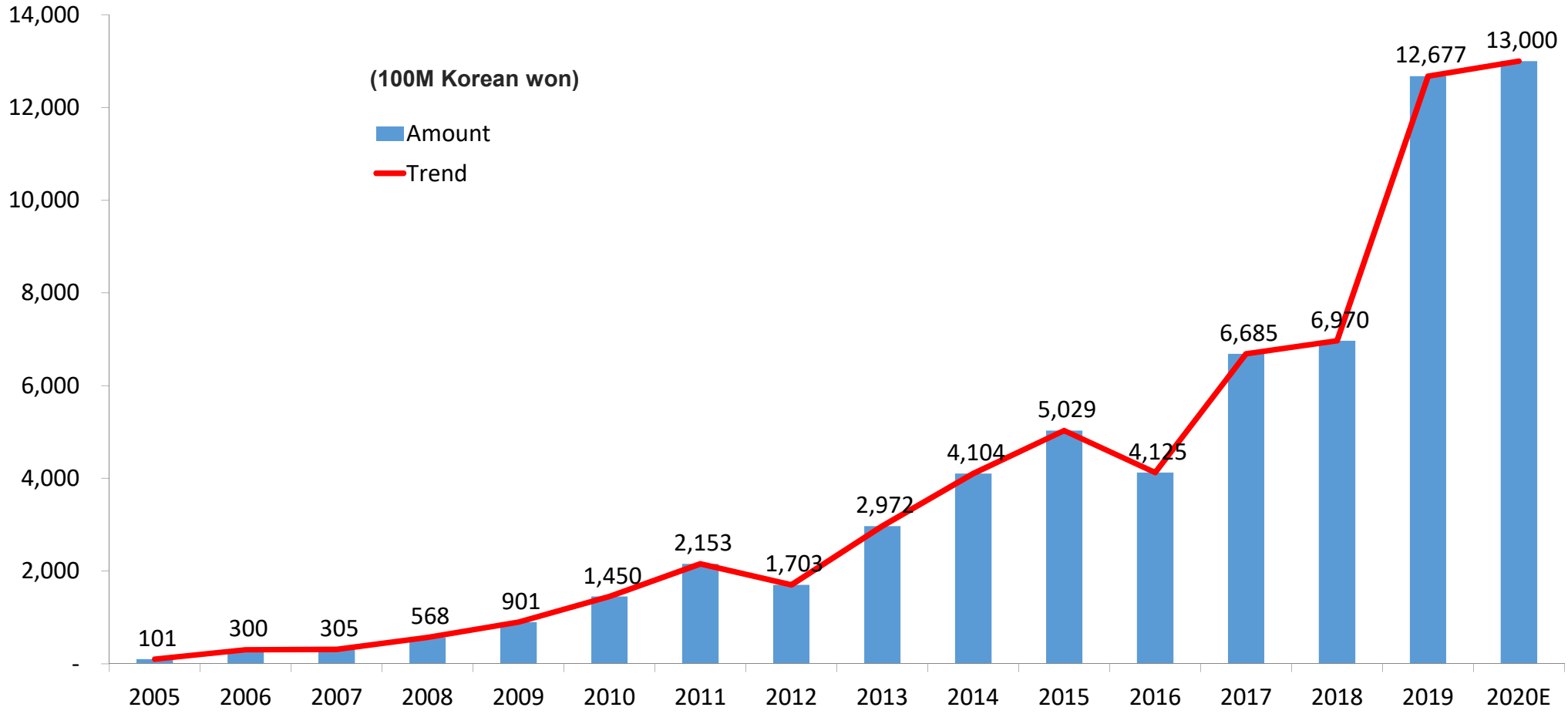
“Continuous Growth”- CAGR 38% (2005 ~ 2019)



※ Consolidated financial statements from 2009

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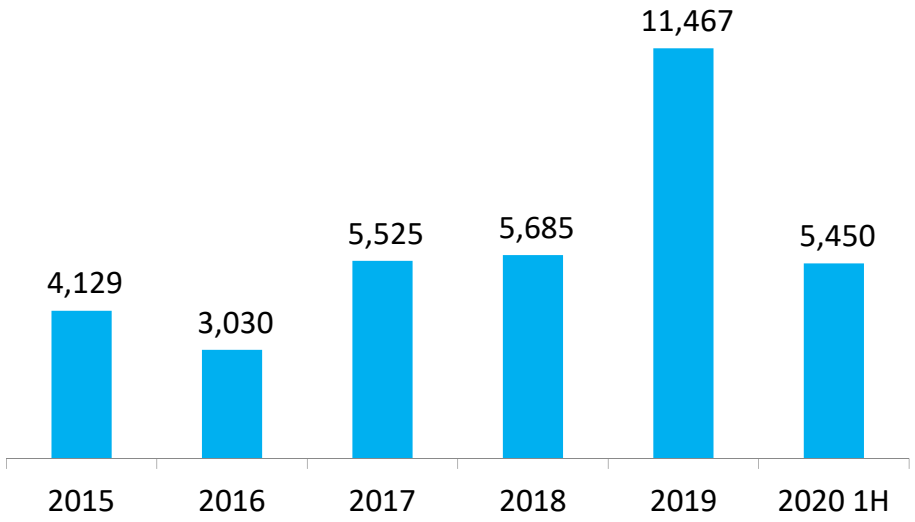
Business performance

Sales amount of mobile phone camera

※ Consolidated

Mobile phone

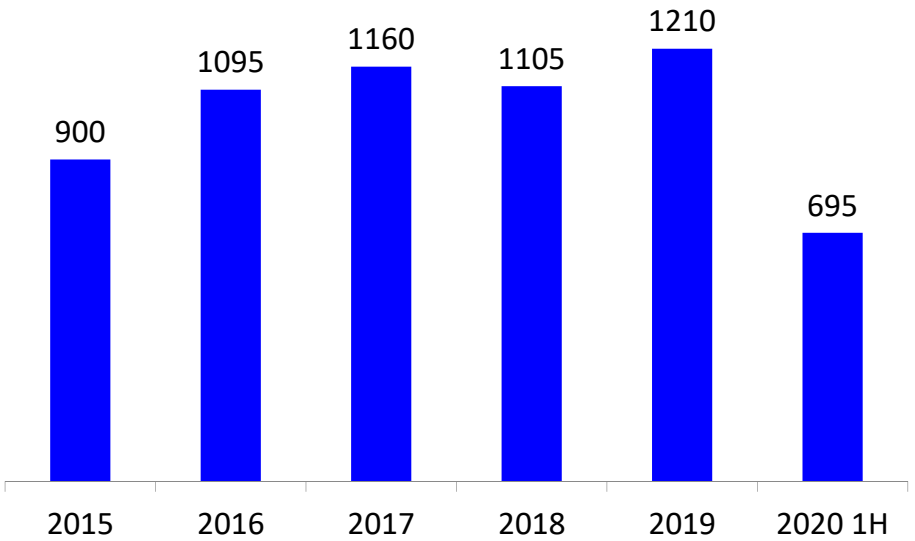


(100M Korean won)

Sales amount of automotive camera

※ Consolidated

Automotive



(100M Korean won)

Financial status per site

(100M Korean won) [End of 2019]

Site	Asset	Capital	Sales amount
MCNEX(Headquarter)	4,655	2,688	11,849
MCNEX VINA (Vietnam)	3,602	447	11,146
MCNEX CHINA	131	16	215

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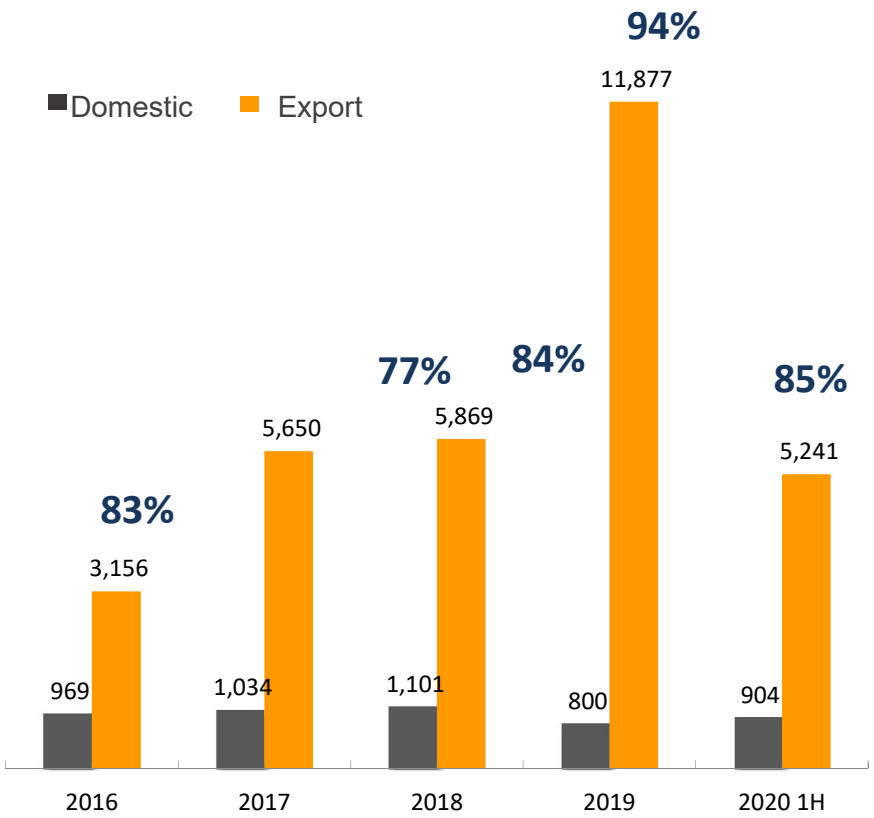
Business Performance

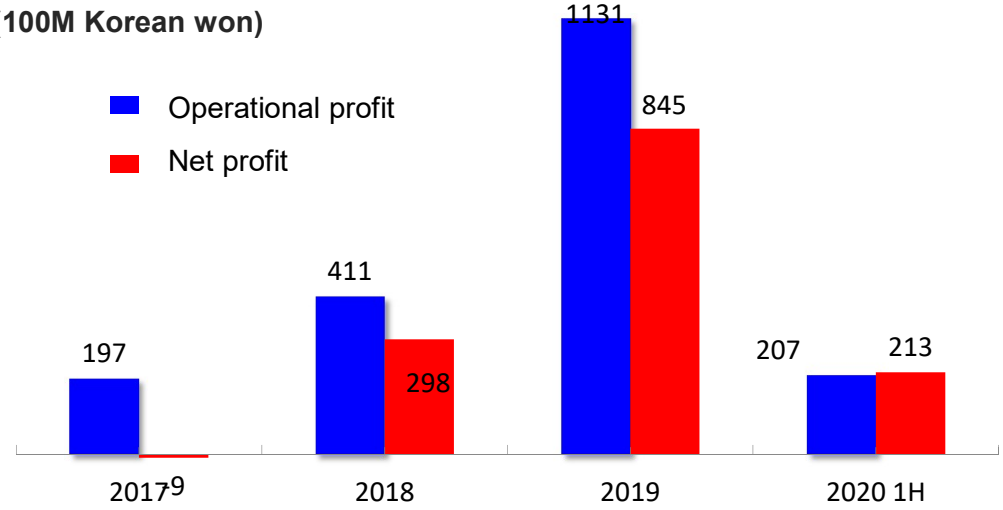
Export / Domestic Market portion

(100M Korean won)



Profit

(100M Korean won)



Year	1Q	2Q	3Q	4Q	Total
2016	872	1,030	1,068	1,155	4,125
2017	1,485	1,663	1,889	1,648	6,685
2018	1,560	1,624	1,606	2,180	6,970
2019	2,508	3,724	3,494	2,951	12,677
2020	3,690	2,455			6,145

(100M Korean won)

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Financial Report (Consolidated)

Balance sheet

(1M Korean won)

CATEGORY	2020 1H	2019	2018
Current Asset	294,267	235,252	218,821
Non Current Asset	248,462	241,329	172,233
Total Asset	**542,729**	**476,581**	**391,054**
Current Liability	278,438	244,811	257,406
Non Current Liability	25,189	7,203	3,939
Total Liability	**303,627**	**252,014**	**261,345**
Equity	8,932	8,932	8,613
Capital Surplus	50,232	50,232	38,393
Accumulated other comprehensive income	877	(774)	(2,589)
Earned Surplus	178,916	166,446	86,069
Total Equity	**239,102**	**224,567**	**129,709**

Income Statement

(1M Korean won)

CATEGORY	2020 1H	2019	2018
Sales	**614,484**	**1,267,712**	**696,954**
Cost of Sales	555,576	1,083,588	609,782
Gross Margin	**58,908**	**184,124**	**87,172**
Expenses	38,164	71,057	46,060
Business Profit	**20,744**	**113,067**	**41,112**
Non Operating Income	32,395	46,882	27,236
Non Operating Expense	20,964	38,499	25,567
Income and loss before incomes tax	**32,175**	**121,449**	**42,781**
Income Tax expenses	10,832	36,942	12,963
Net profit during the term	**21,343**	**84,507**	**29,818**

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Q & A

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Thank you!

THE EYE OF IT WORLD. MCNEX

CONTINUOUS INNOVATION AND CHALLENGE

“Continuous innovation and challenge to the world best”

Please keep to support and expect the challenge of MCNEX creating a new future with continuous innovation and challenge.

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