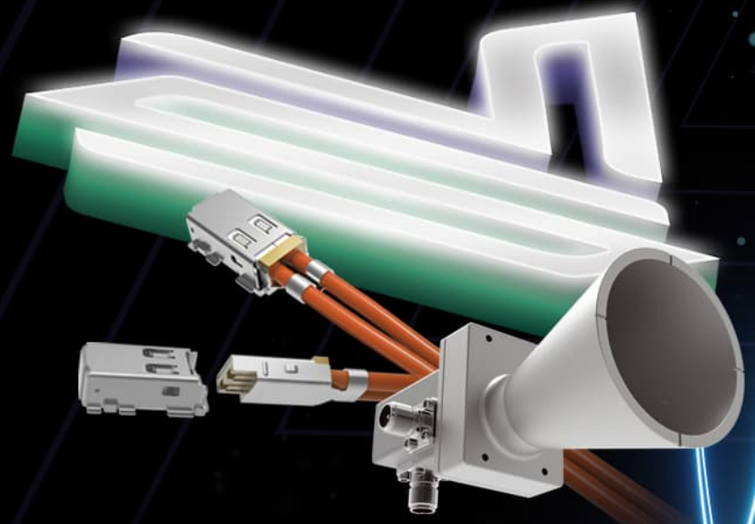
SENSORVIEW

We make your perform RF BEST



SENSORVIEW
COMPANY PROFILE

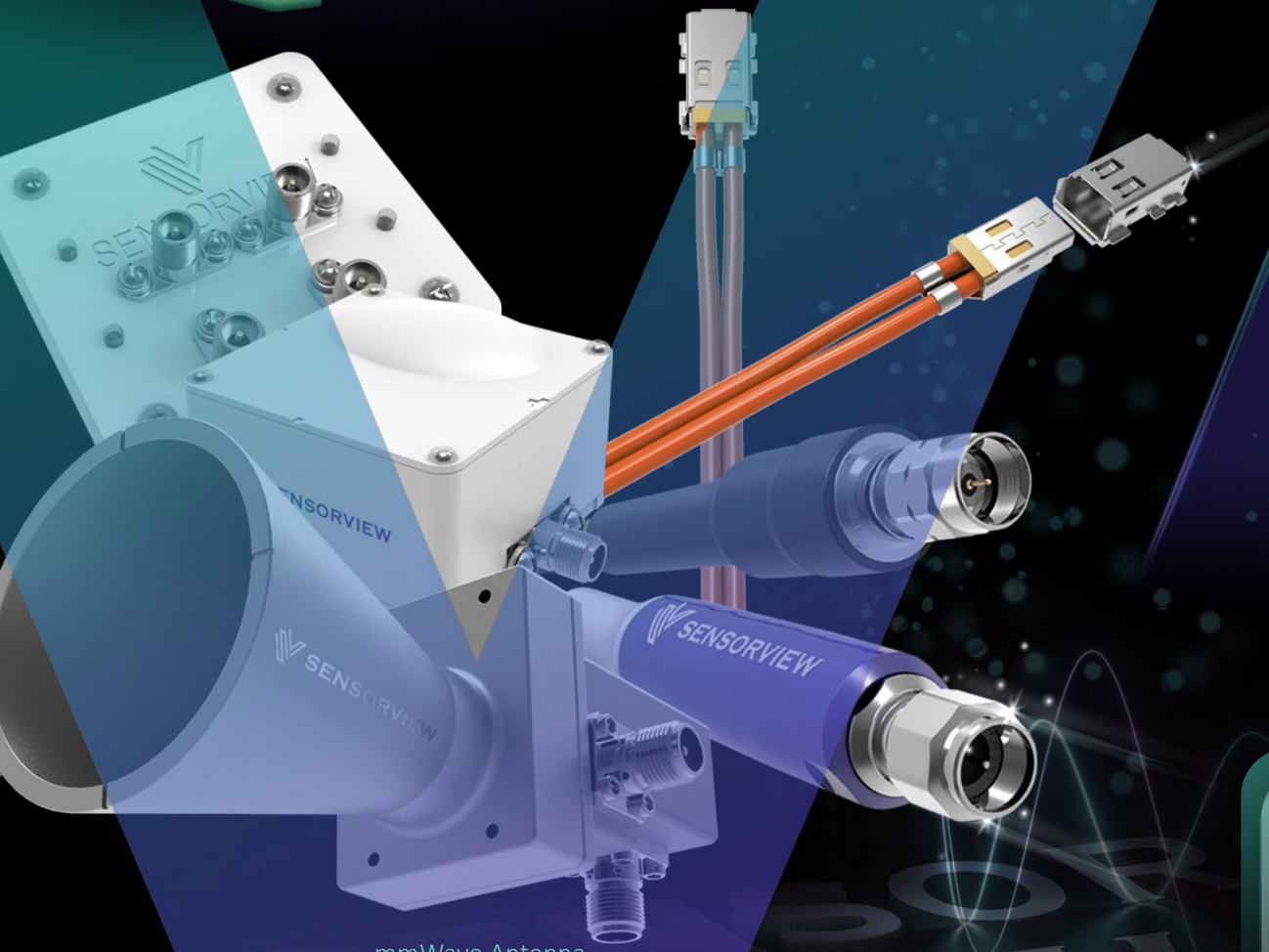
SENSORVIEW

Vision

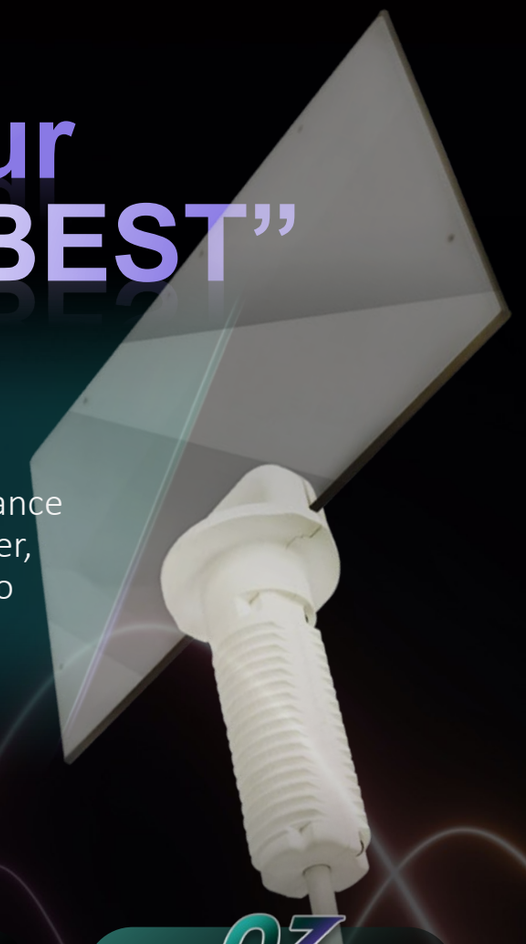
“We make your RF perform BEST”

Mission

“We design and manufacture high performance RF Interconnector and Antenna. RF designer, test engineers can leverage our products to make their RF performance best on time.”



mmWave Antenna
Microwave Cable
Value added new Material



Core Capability

01

mmWave-oriented RF passive design

02

mmWave-beneficial **material fusion**

03

Expert in manufacturing and testing **up to 110GHz**

Customer Success Story

01 A customer had a pain in :

Ultraminiaturized Interconnector

Transferring 2-lines of 10GHz RF signals with **low-loss** and **near-zero crosstalk** with extremely **small footprint** for connector.

The customer could launch their product by using SENSORVIEW products :

MG210

I / L : -0.65dB / cm@10GHz
Crosstalk - 45dB
RF 2ports in 3.7 x 5.9mm

02 A customer had a pain in :

Antenna

Designing and manufacturing an **60GHz band Antenna** for their IC.
To guarantee IC's full spec., the Antenna should show **gain-flatness** and **good isolation.**

The customer could design-in their IC on time with SENSORVIEW Antennas :

Solderable Antenna Modules ST60 SAM

Working with any substrates (even with FR4)

03 A customer had a pain in :

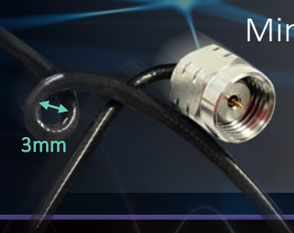
Microwave Cable

Routing **67GHz** Microwave Cables in their system where nearly **no space for routing cable** smoothly, even the cable should perform **low-loss** and **low VSWR.**

The customer use SENSORVIEW products without changing their mechanical design :

MBR1.5mm

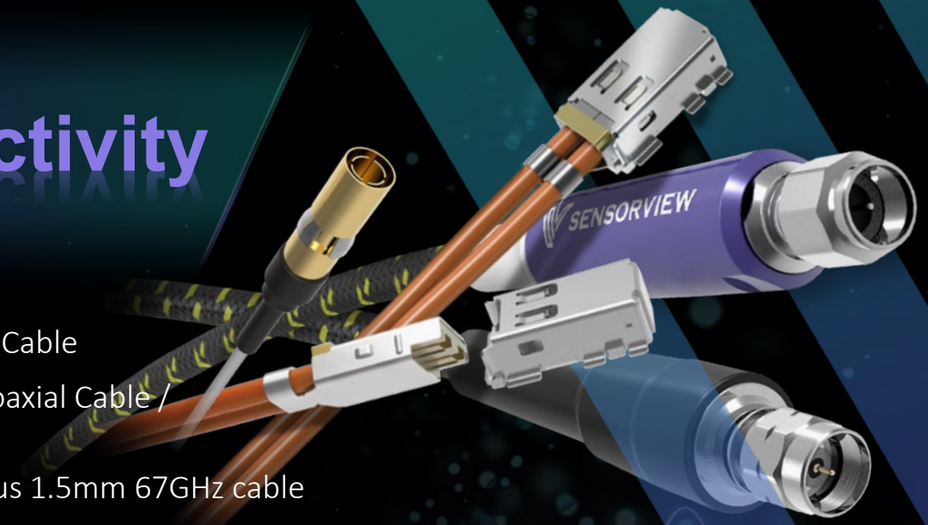
Minimum Bend Radius : **1.5mm**
I / L : -8dB / m@40GHz
I / L : -11dB / m@67GHz
VSWR : Typical 1.25



5G SENSORVIEW

Product Line

Connectivity



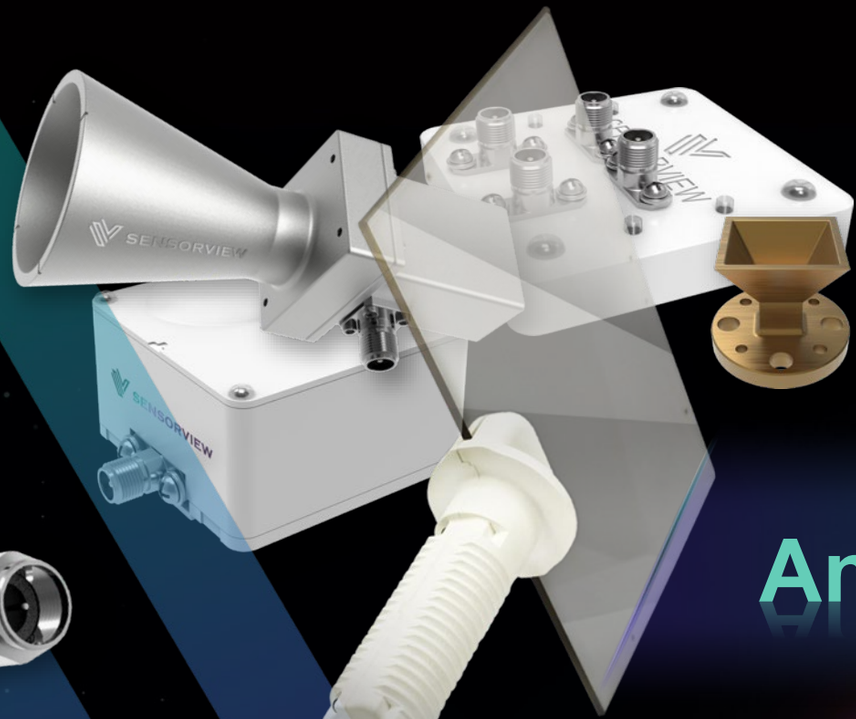
- Microwave Precision Cable
- Ultra-miniaturized Coaxial Cable / Connector for SMT
- Minimum Bend Radius 1.5mm 67GHz cable

FlexStable

MG210 / MG215M

MBR1.5mm

Antenna



- Installation Antennas for mobile carrier
- Antenna Modules
- Test Antennas

Transparent Antenna

ST60 Antenna Modules (SAM)

Test Antenna (SMFinder)

R&D / Production

RF /
Mechanic Engineer

30+

R&D /
Test & Measurement

UP TO 110GHz

Registered Patents /
IPs

40+

PRODUCTION

1st Factory
Microwave Cable

Under Construction

2nd Factory
Micro-Coaxial Cable and Antenna

5G
SENSORVIEW

SENSORVIEW

Antenna, RF Coax & Connectors

Business Area

Business Area

1 Micro-Coaxial Interconnection

2 TLIA®

3 Flex-S®

4 mmWave Array Antenna

5 mmWave Probe Antenna

6 In-Building Antenna

7 Low-loss phase-matched Microwave Cable

8 Phase-matched Adapter

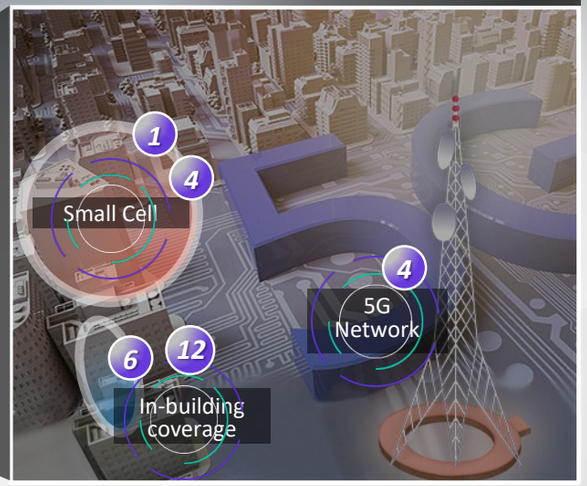
9 Precision RF connector

10 ST60 Antenna Modules (SAM)

11 MBR1.5mm (FlexiBe)

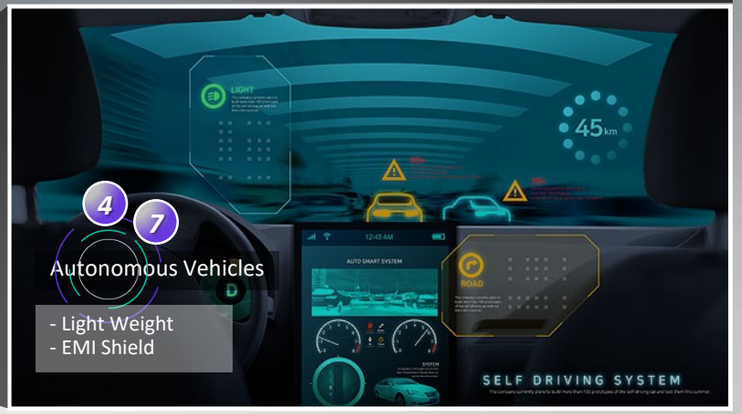
12 Transparent Antenna

5G Infra Solution

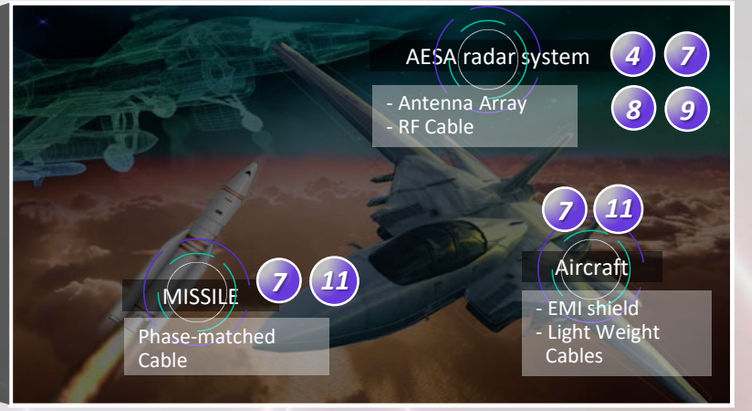


5G Wireless Devices

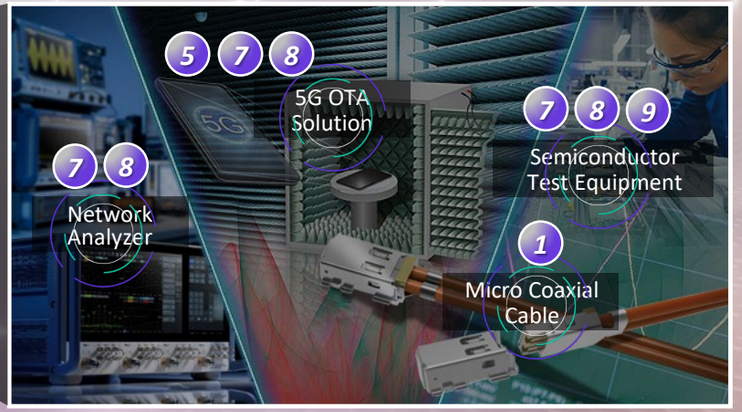
Connected Car based on 5G



Aerospace & Defense



RF T&M/ 5G(mmWave) T&M

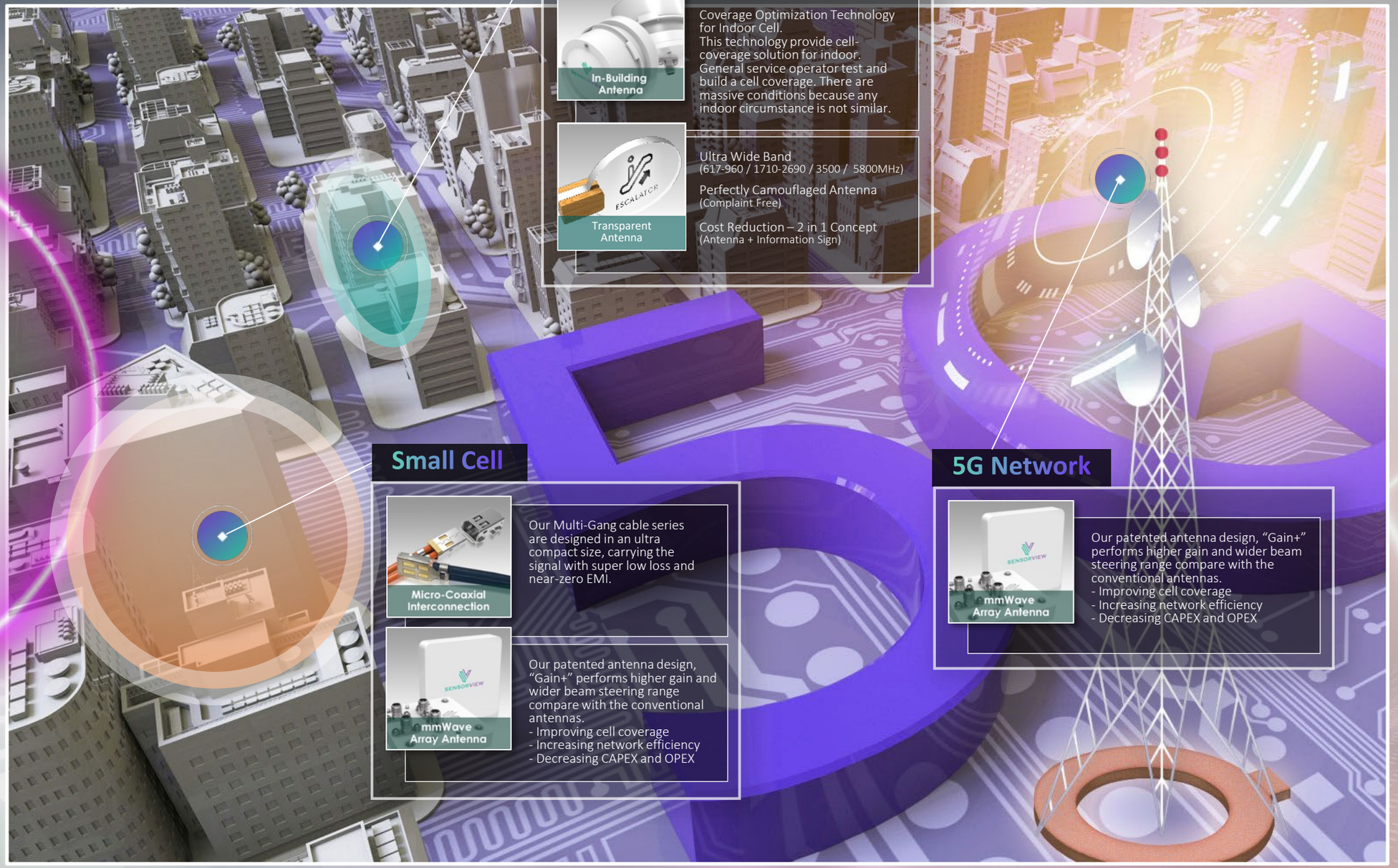


Industries

5G Infra Solution

5G Infra Solution

Ultra Wideband Antenna for
in-building solution.
Antenna technologies for high gain.



Industries

5G Wireless Device

5G Wireless Device

TLIA® solution can be used in various IT application with huge market potential!

Smart TV

Coverage Optimization Technology for Indoor Cell.
This technology provide cell-coverage solution for indoor. General service operator test and build a cell coverage. There are massive conditions because any indoor circumstance is not similar.

High Speed(6.25Gbps), Low Power-consumption(mW) and short distance(5~200mm) 60GHz Wireless connector.
High-Gain + Gain-Flatness + Improved-Isolation with Miniaturized Form Factor

5G Laptop

Our Multi-Gang cable series are designed in an ultra compact size, carrying the signal with super low loss and near-zero EMI.

High Speed(6.25Gbps), Low Power-consumption(mW) and short distance(5~200mm) 60GHz Wireless connector.
High-Gain + Gain-Flatness + Improved-Isolation with Miniaturized Form Factor

5G Smartphone

Our Flex-S® (multi-line cable) and TLIA® (Transmission Line Integrated Antenna) are composed by low loss materials and are designed by patent protected technologies. These are vital components in mmWave devices offering super low loss and high · quality performance.

High Speed(6.25Gbps), Low Power-consumption(mW) and short distance(5~200mm) 60GHz Wireless connector.
High-Gain + Gain-Flatness + Improved-Isolation with Miniaturized Form Factor

Industries

Automotive

Connected Car based on 5G

Connected Car based on
5G - Light Weight, EMI Shield

Industries

Aerospace & Defense

Aerospace & Defense

Military / Airplane, EMI Shielding Solution

AESA radar system

Our patented antenna design, “Gain+” performs higher gain and wider beam steering range compare with the conventional antennas.
- Improving cell coverage
- Increasing network efficiency
- Decreasing CAPEX and OPEX

Our Phase Matched adapter meets MIL STD 348 and we are manufacturing a wide range of adapters within / between series. Matched adapters have the same nominal connector mating reference plane to reference plane length.

Our connectors are designed and fabricated to guarantee optimized performance of the end products. We can provide the optimum transition for low return loss. Specially we can tailor connectors to specific equipment and application needs.

MISSILE / Aircraft

Our unique braiding technology, “Zenild®” provides superior shielding effectiveness VS copper wire and offers significant weight savings.
- Silver Plated Fiber Weights over 60% savings VS
- copper wire at equal volume Excellent
- conductivity Great EMI shiel

Bendable® Microwave Cable Wireless Connector.
Minimum Bend Radius 1.5mm
- DC to 67GHz
- Low-loss, EMI shielding
- MIL-STD satisfactory
- MBR1.5mm, Outer diameter 2mm

Industries

Test & Measurement

Test & Measurement

COMPACT OTA TESTING Total size Reduction SENSORVIEW ANTENNA

Network Analyzer

We offer high quality coaxial cable assemblies with excellent performance.
- Low Insertion Loss
- Phase Stable vs Temperature
- Insertion Loss Stable vs Bend
- Phase Stable vs Bend
- Low VSWR

Our Phase Matched adapter meets MIL STD 348 and we are manufacturing a wide range of adapters within / between series. Matched adapters have the same nominal connector mating reference plane to reference plane length.

mmWave OTA solution

Our miniature size multi-band antenna is an optimized solution for 5G AUT in test & measurement and will minimize your chamber sizes, decrease budgets and maximize your test performances.

We offer high quality coaxial cable assemblies with excellent performance.
- Low Insertion Loss
- Phase Stable vs Temperature
- Insertion Loss Stable vs Bend
- Phase Stable vs Bend
- Low VSWR

Our Phase Matched adapter meets MIL STD 348 and we are manufacturing a wide range of adapters within /between series. Matched adapters have the same nominal connector mating reference plane to reference plane length.

Semiconductor Test Equipment

Our miniature size multi-band antenna is an optimized solution for 5G AUT in test & measurement and will minimize your chamber sizes, decrease budgets and maximize your test performances.

We offer high quality coaxial cable assemblies with excellent performance.
- Low Insertion Loss
- Phase Stable vs Temperature
- Insertion Loss Stable vs Bend
- Phase Stable vs Bend
- Low VSWR

Our Phase Matched adapter meets MIL STD 348 and we are manufacturing a wide range of adapters within /between series. Matched adapters have the same nominal connector mating reference plane to reference plane length.

Our connectors are designed and fabricated to guarantee optimized performance of the end products. We can provide the optimum transition for low return loss. Specially we can tailor connectors to specific equipment and application needs.

SENSORVIEW

Antenna, RF Coax & Connectors

Product Groups

Microwave Cable Connector

Super-Flexible® Microwave Cable

SENSORVIEW FlexStable® microwave cable assembly series offer excellent performance providing various benefits to your specific needs.

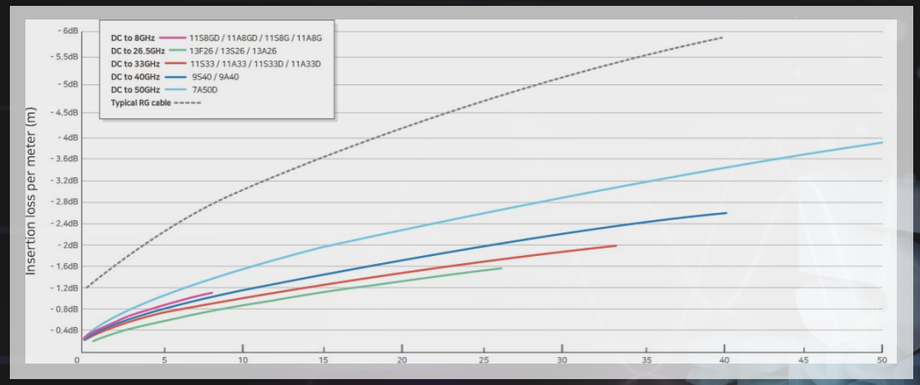
- *Freq. DC to 70GHz*
- *VP (Velocity of propagation) 77 to 84%*
- *Low-loss*
- *Phase-stable (vs. bending)*
- *phase-matching under 1ps.*

SUITABLE for

- Lab & bench test
- OTA shield box
- Phase-matched interconnection
- Defense application

SPECIFICATIONS

Part Name	Operating Frequency [DC to Max]	Center Conductor		Outer diameter [mm]	Minimum bending radius [mm]	Attenuation		Available Connector						
		Dia. [mm]	Type			[dB/m] @Max Freq.	[dB/ft] @Max Freq.	N	SMA	3.5mm	HFSMA	2.92mm	2.4mm	1.85mm
13F26	26.5GHz	1.34	Stranded	5.7	30	- 1.55	- 0.473	●	●	●	●		●	
13S26				6.2										
13A26				6.7										
11S33	33GHz	1.12	Stranded	5.3	25	- 2.00	- 0.610				●			
11A33				5.7										
11S33D	33GHz	1.12	Solid	5.3	25	- 1.85	- 0.564				●			
11A33D				5.7										
9S40	40GHz	0.9	Stranded	5.0	25	- 2.60	- 0.793					●	●	
9A40				5.4										
7A50D	50GHz	0.7	Solid	4.5	20	- 3.90	- 1.189						●	
5A67D	67GHz	0.5	Solid	3.6	20	- 6.40	- 1.951							●

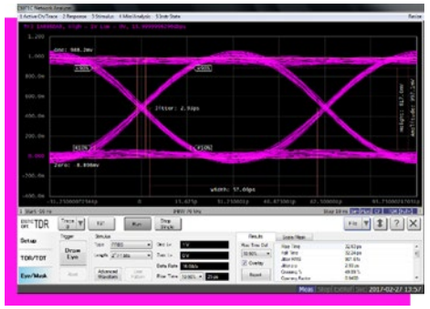


Microwave Cable Connector

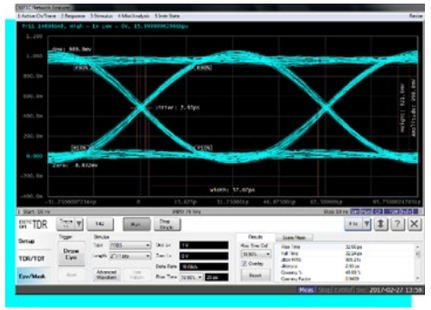
FEATURES

TOP-CLASS PHASE-MATCHING

Eye Pattern



Cable 1 : SMA(m) – 13A26 – SMA(m) – 39.4 inch



Cable 2 : SMA(m) – 13A26 – SMA(m) – 39.4 inch

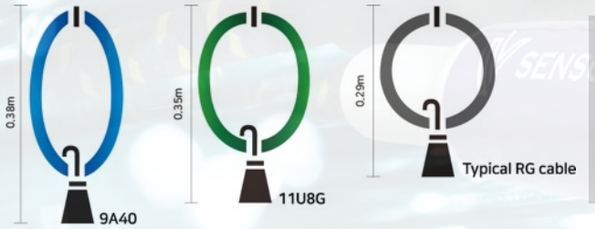
Tr / Tf (skew)

	Cable 1	Cable 2	△[ps]
Rise Time[ps]	32.63	32.66	0.03
Fall Time[ps]	32.24	32.24	0

SUPER FLEXIBLE

DUT and condition Tested cable : FlexStable(9A40), UltraRG(11U8G), Typical RG cable

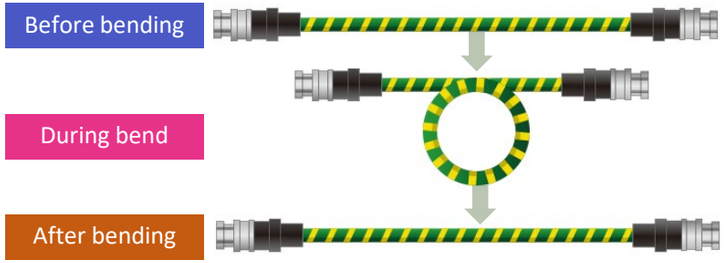
Test results Test condition : 1meter, Weight 520gram, 25°C



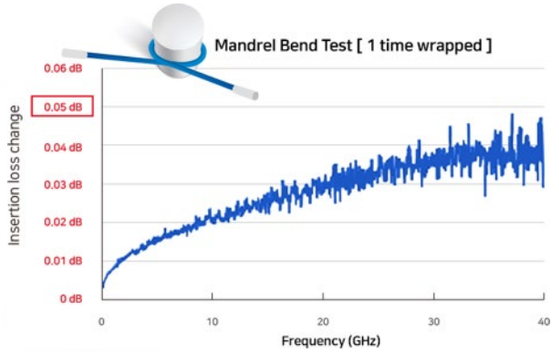
More drooped the weights are, more flexible cable is. FlexStable shows the longest droop, which means it affects little force to connector and DUT, accordingly more stable and easy to use in a lab and bench, also convenient to install in a chamber.

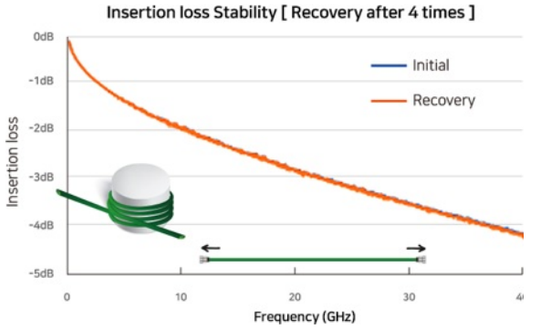
PHASE STABILITY (VS. BENDING)

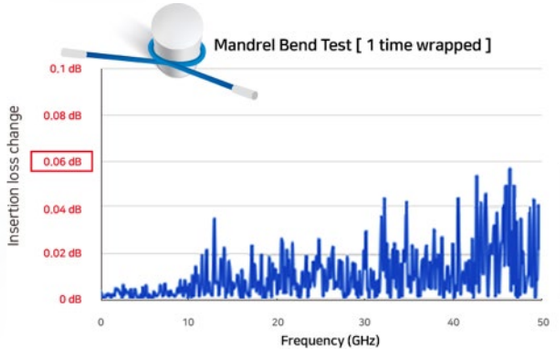
'Insertion loss' and 'phase change' are measured under a bended condition using a 'Minimum Bend Radius' mandrel.

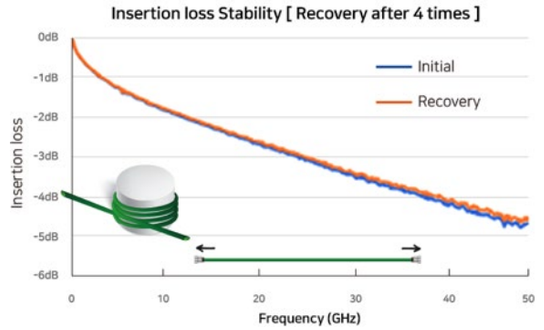


2.92mm(m) – 9A40 – 2.92mm(m) – 1.0 m









SENSORVIEW

M Group
MG210 / MG215M

SENSORVIEW MG series is low-loss, low EMI leakage multi-gang micro interconnector.

MULTI/MICRO-COAXIAL GANGED INTERCONNECTOR

- High shielding
- DC to 15GHz
- 2ports RF coaxial

SUITABLE for

- CPE (Customer Premises Equipment)
- Femtocell / Smallcell
- Laptop
- M.2 Card

SPECIFICATIONS

MG215M	Specification		MG210
2ports (can assemble with 1port connector)	**Ports (RF Signal)**		2ports (can assemble with 1port connector)
DC to 15GHz	**Frequency**		DC to 10GHz (Can support up to 15GHz)
Vertical (Top-down)	**Mating direction**		Horizontal (Sliding)
3.1 x 2.0mm	**Size (X,Y)**	**{PCB pad}**	3.7 x 5.9mm
3.1 x 2.0mm	**Size (X,Y)**	**{Top view}**	3.7 x 5.9mm
1.4mm	**Size (Z)**	**{Mate height}**	2mm
1.1mm	**Cable**	**diameter**	0.88mm
-1.35dB	**Insertion loss**	**(@10GHz/200mm)**	-1.7dB
Max 1.5	**VSWR**	**(DC to 15GHz)**	Max 1.5
< -50dB	**Crosstalk**	**(DC to 15GHz)**	Typical <-45dB

M Group
MG210 / MG215M

Minimize footprint size by 2 ganged connector.

MG210

What is 5G Antenna module?

Communication equipment (small-cell and baseband station) manufacturers have difficulties in designing mmWave antenna module yet. For this reason, Qualcomm provides mmWave antenna modules, not chipset only.

Where Sensorview products?

MG210 is mounted on Qualcomm's mmWave Antenna module (circle-marked in blue above)

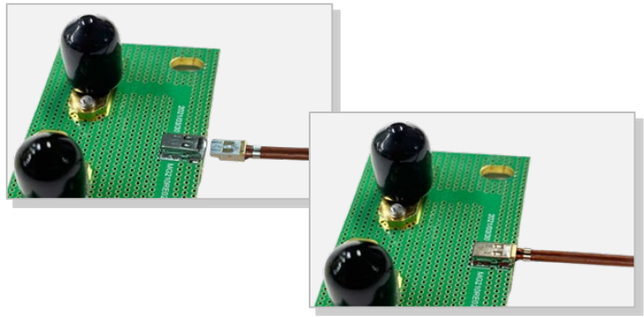
APPLICATION

5G Antenna module for Small cell & base station

Receptacle

+ Horizontal (Sliding) mating

Plug cable assembly



MG215M

What is 5G M.2 card?

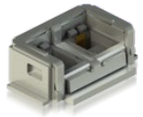
Laptop, CPE manufacturers need easy 'plug and play' card to realized 5G mmWave. For this reason, OEM of Qualcomm manufactures M.2 cards by Qualcomm's reference design

Where Sensorview products?

MG215M is listed on recommended components in Qualcomm reference design (circle-marked in blue above)

APPLICATION

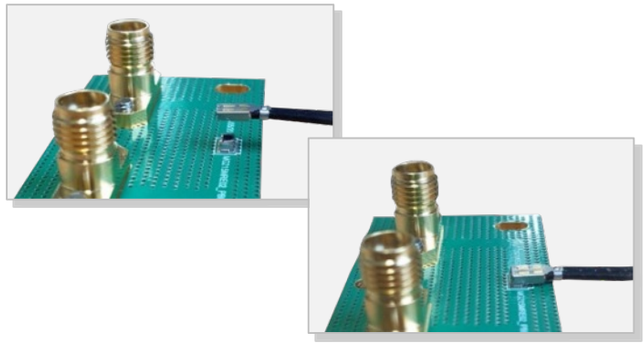
5G M.2 card for Laptop & CPE



Receptacle

+ Vertical mating

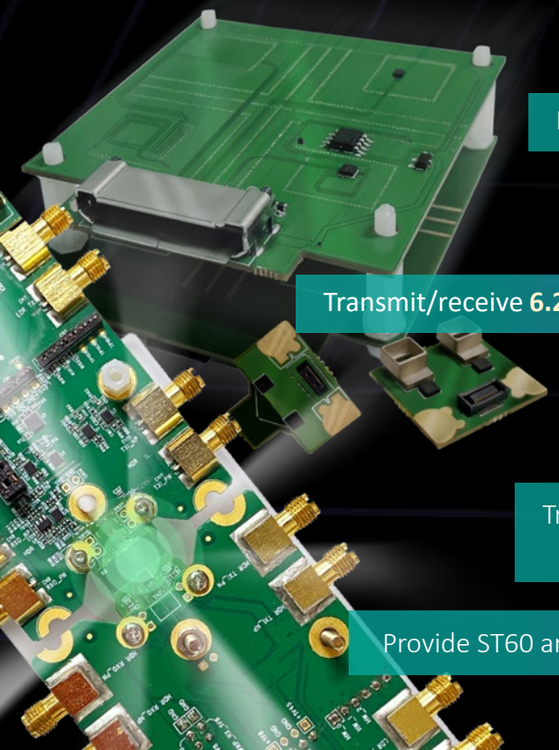
Plug cable assembly



SENSORVIEW

ST60 Antenna Modules

High Speed(6.25Gbps), Low Power-consumption(mW) and short distance(5~200mm) 60GHz Wireless connector



Replace physical-contacting cable and connector

Communicate in rotating 360degree

Transmit/receive **6.25Gbps** without physical contact of connectors

No wear-off conductor(or pin) of connector and cable

Transmit/receive data and power with combination of commercialized wireless-power-transfer device

Provide ST60 antenna modules with interfaces of connector or SMT

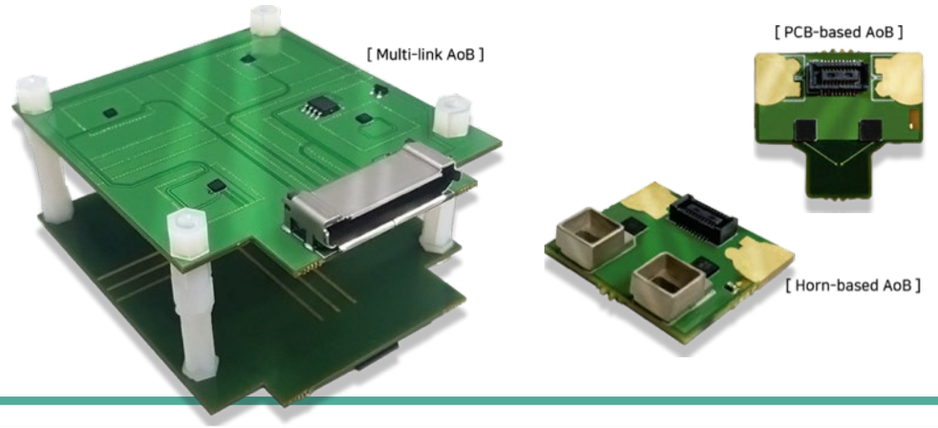
SUITABLE for

Contactless Chip-to-chip data transmission (6Gbps, Total jitter 0.375 UI, 5~80mm)

WiGig (802.11ad/ay)

60GHz Band Antenna Module for hyperspeed signal transfer with low power consumption

SENSORVIEW 60GHz Antenna

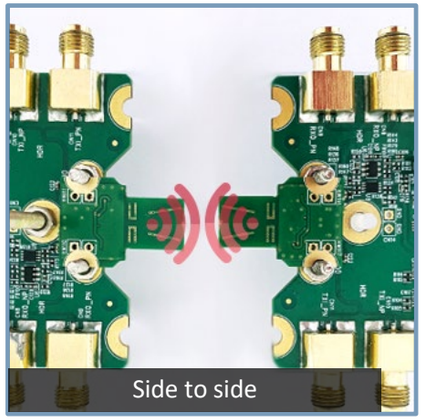


Item	Specification
Data rate	Up to 6.25Gbps
Power consumption	44mW in Tx / 27mW in Rx / 3.5uW in OFF mode
Operating temp.	Consumer range : -20 to 85℃ / Industrial range: -40 to 105℃
Size	IC size : 2.2 x 2.2mm / Antenna module size : 30~100mm^2
Antenna	55-65GHz, Face to face / Side to side
Working distance	5 ~ 200mm
Communication	Half duplex / Full duplex
Channels	You can use Ser / Des to multiply channels with one IC or just add more IC

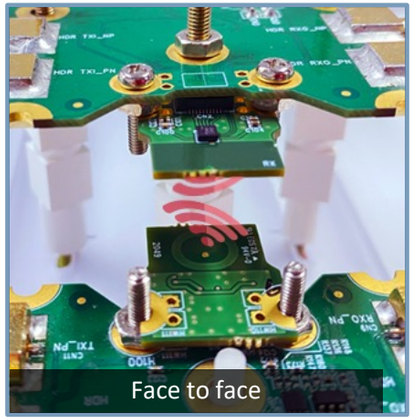
ST60 Antenna Modules

FEATURES

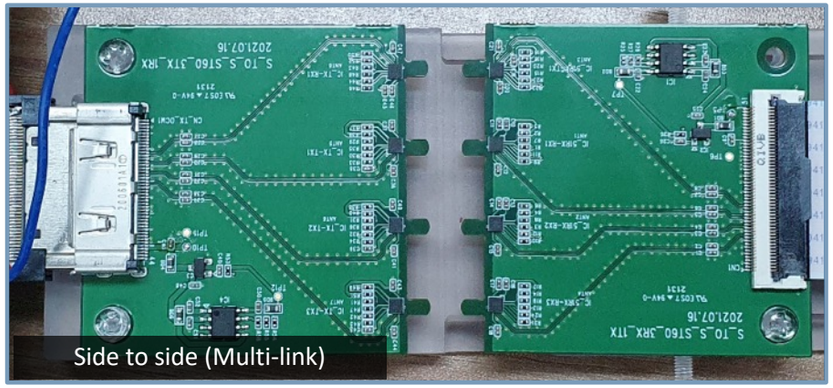
High-Gain + Gain-Flatness + Improved-Isolation with Miniaturized Form Factor



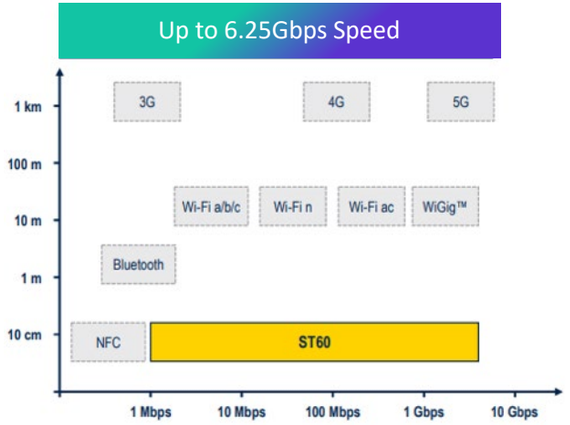
Side to side

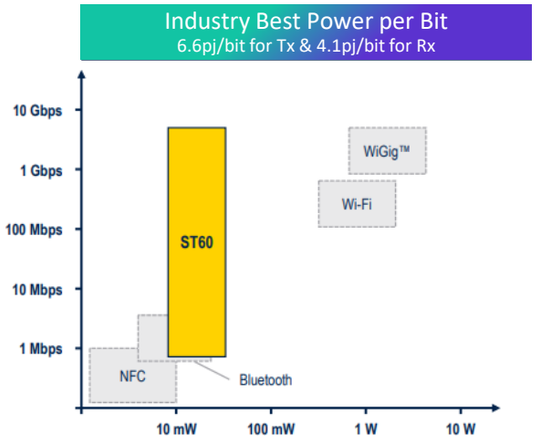


Face to face



Side to side (Multi-link)





Factory Automation (e.g. OTA Testing & Flashing)

No cables to plug/unplug for reliability and higher manufacturing productivity.

Display (e.g. LED TV & display wall)

LED tiles without physical connectors for detachability, form-factor, reliability.

Industrial Equipment (e.g. monitoring, machine vision)

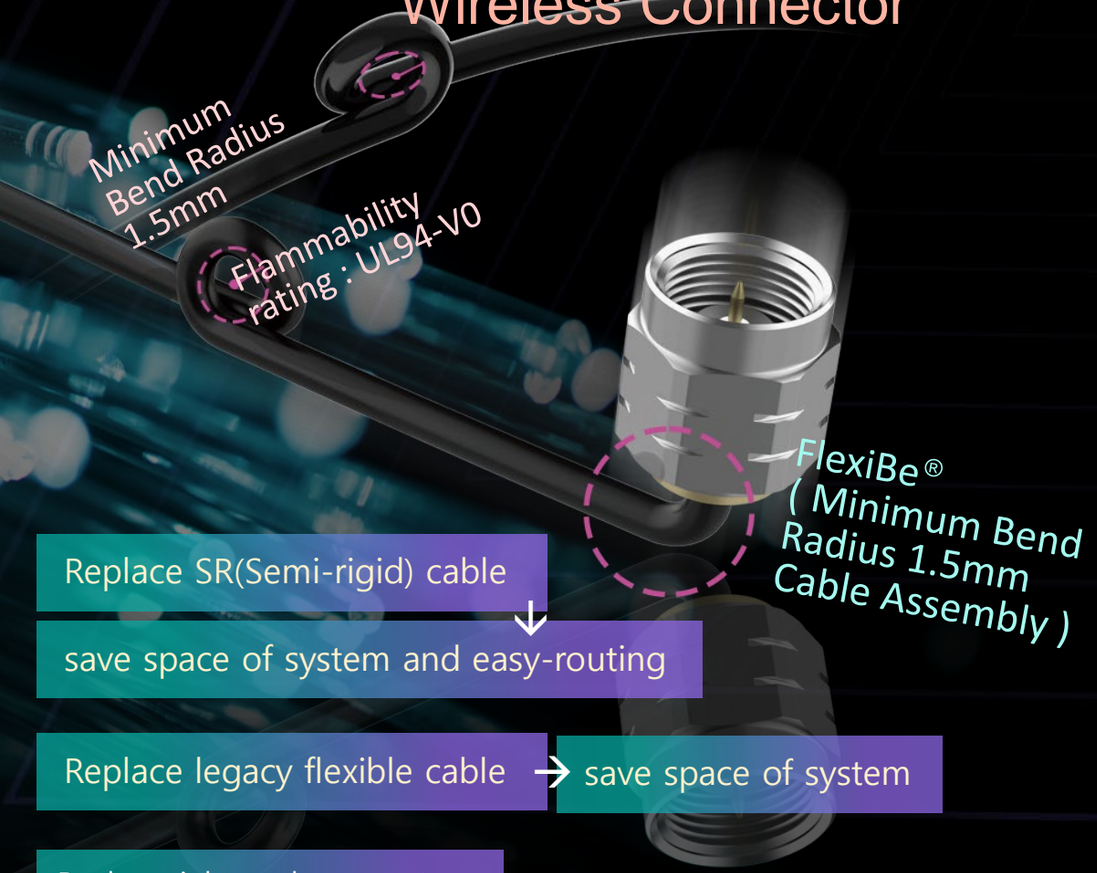
Contactless, freedom of movement, physical and electrical isolation, form-factor, reliability.

Personal Electronics (e.g. Smartphone, wearable)

No connector wear & tear, water and dust proof, sleek design, foldable display.

SENSORVIEW

FlexiBe®
(Minimum Bend Radius 1.5mm Cable Assembly)
Bendable* Microwave Cable Wireless Connector



Replace SR(Semi-rigid) cable
↓
save space of system and easy-routing

Replace legacy flexible cable → save space of system

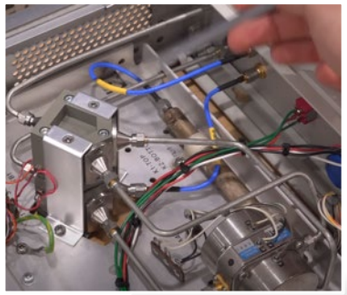
Replace right-angle connectors
↓
Better performance in return-loss and cheaper solution

Bendable* : *Minimum Bend Radius 1.5mm*

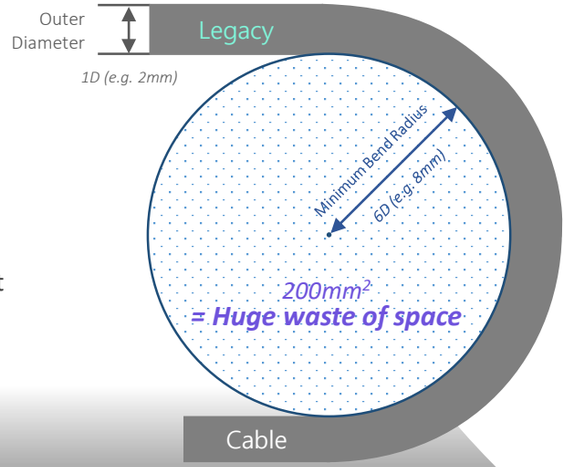
Cable Specification	
Characteristic Impedance	Typ. 50Ω
Operating Frequency	DC to 67 GHz
Temperature	-40 ℃ ~ +120 ℃
Velocity of Propagation	70% nominal
Minimum Bend Radius	1.5 mm / 0.059 inch

Insertion Loss [25℃, at Sea Level]		
Frequency	**[dB/1m]**	**[dB/FT]**
10 GHz	- 3.6	- 1.09
20 GHz	- 5.3	-1.61
30 GHz	- 6.7	-2.04
40 GHz	- 8.0	- 2.43
50 GHz	- 9.3	-2.83
67 GHz	- 11.0	- 3.35

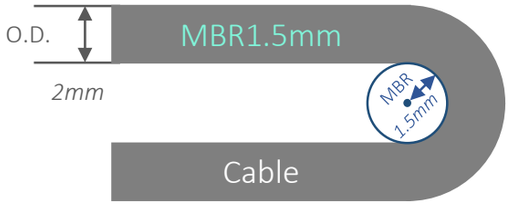
Limitation of legacy microwave cable



- Space waste due to large MBR(Minimum Bend Radius)
- Vulnerable to vibration of SR (Semi-rigid) cable and difficult routing and assembly



SENSORVIEW Solution



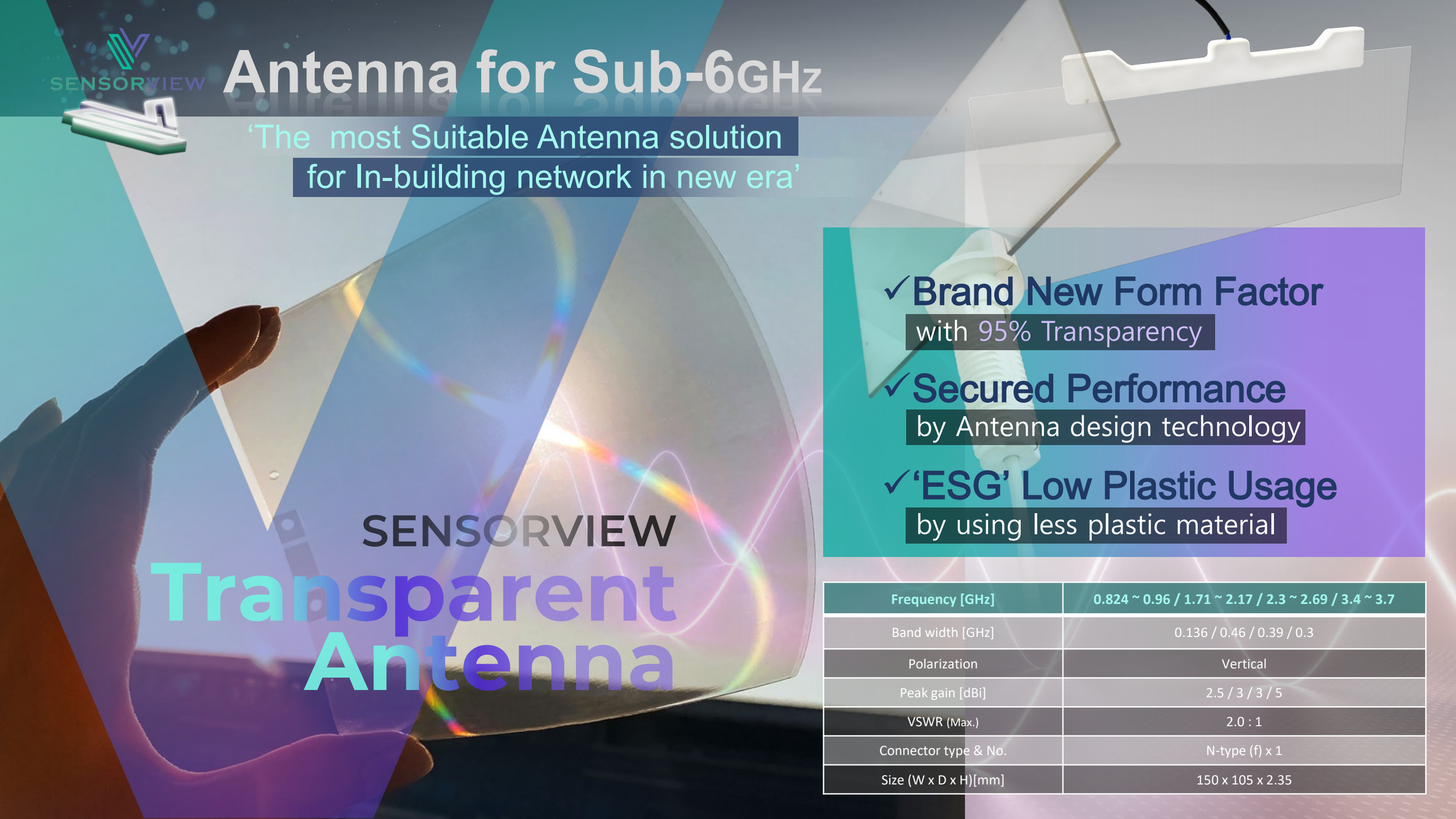
7mm² → 96% Space saving

- DC to 67GHz
- Low-loss, EMI shielding
- MIL-STD satisfactory
- MBR1.5mm, Outer diameter 2mm

SENSORVIEW

Antenna for Sub-6GHz

‘The most Suitable Antenna solution for In-building network in new era’



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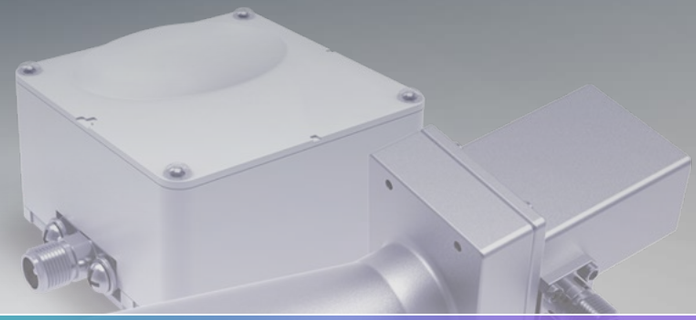
Transparent Antenna

- ✓**Brand New Form Factor** with 95% Transparency
- ✓**Secured Performance** by Antenna design technology
- ✓**‘ESG’ Low Plastic Usage** by using less plastic material

Frequency [GHz]	0.824 ~ 0.96 / 1.71 ~ 2.17 / 2.3 ~ 2.69 / 3.4 ~ 3.7
Band width [GHz]	0.136 / 0.46 / 0.39 / 0.3
Polarization	Vertical
Peak gain [dBi]	2.5 / 3 / 3 / 5
VSWR (Max.)	2.0 : 1
Connector type & No.	N-type (f) x 1
Size (W x D x H)[mm]	150 x 105 x 2.35

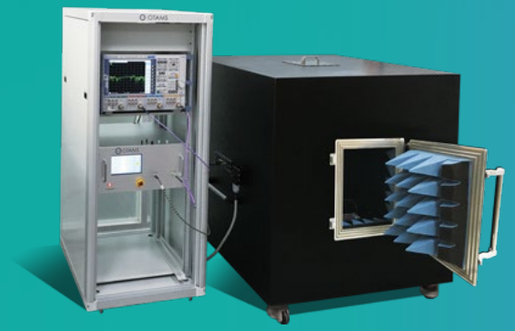
mmWave Antenna



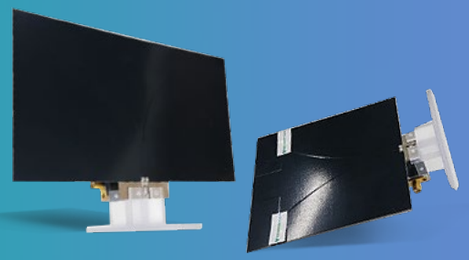
For Sub6

Test & Measurement

600MHz - 9GHz



OTA Chamber



Wide Band Antenna

In-building

698-960MHz/1710-2690MHz/3.5GHz/5.8GHz

Transparent Antenna (SISO)

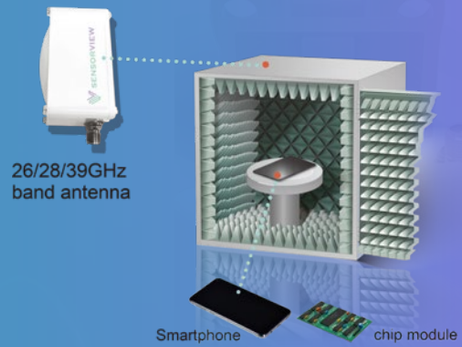
Transparent Antenna (MIMO)

Disk Type Antenna (SISO/MIMO)

For mmWave

Test & Measurement

24GHz – 48.5GHz



Horn Antenna

Lens Antenna

In-building

28GHz (Optimized by request)

Beamforming Antenna (@W/O chip)

Wide beam scanning Antenna

Quality Management and Sustainability

“We use Conflict-Free Mineral”

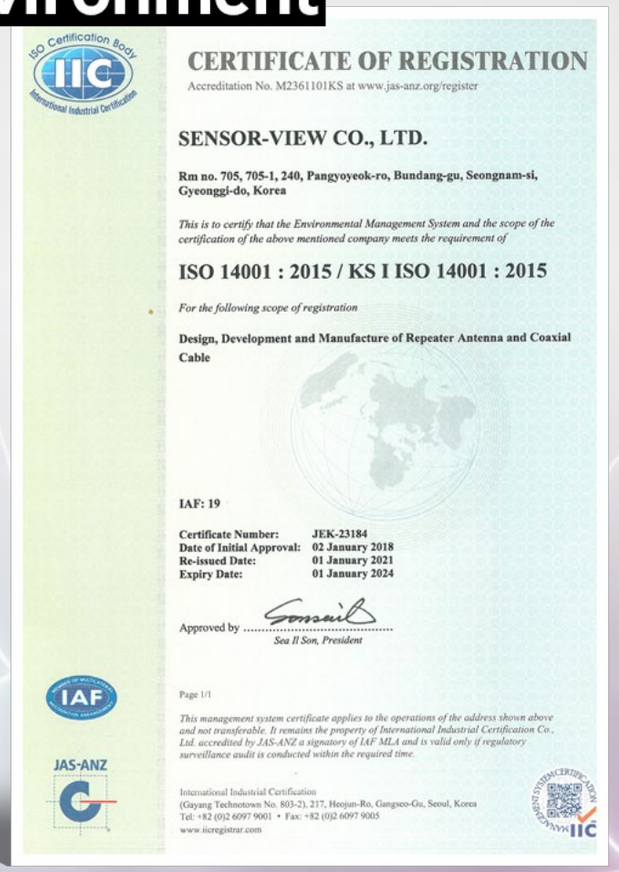
“We practice carbon neutrality”

SENSORVIEW provides the best products and services that meet customer expectations by continuously improving the quality of products and services.
We will become a proud company that our customers and company can co-exist by pursuing safe and environmentally friendly management.

CERTIFICATIONS

ISO 14001

Environment



ISO Certification Body
IIC
International Industrial Certification

CERTIFICATE OF REGISTRATION

Accreditation No. M2361101KS at www.jas-anz.org/register

SENSOR-VIEW CO., LTD.

Rm no. 705, 705-1, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

This is to certify that the Environmental Management System and the scope of the certification of the above mentioned company meets the requirement of

ISO 14001 : 2015 / KS I ISO 14001 : 2015

For the following scope of registration

Design, Development and Manufacture of Repeater Antenna and Coaxial Cable

IAF: 19

Certificate Number: JEK-23184
Date of Initial Approval: 02 January 2018
Re-issued Date: 01 January 2021
Expiry Date: 01 January 2024

Approved by .....
Sea Il Son, President

IAF
JAS-ANZ

Page 1/1

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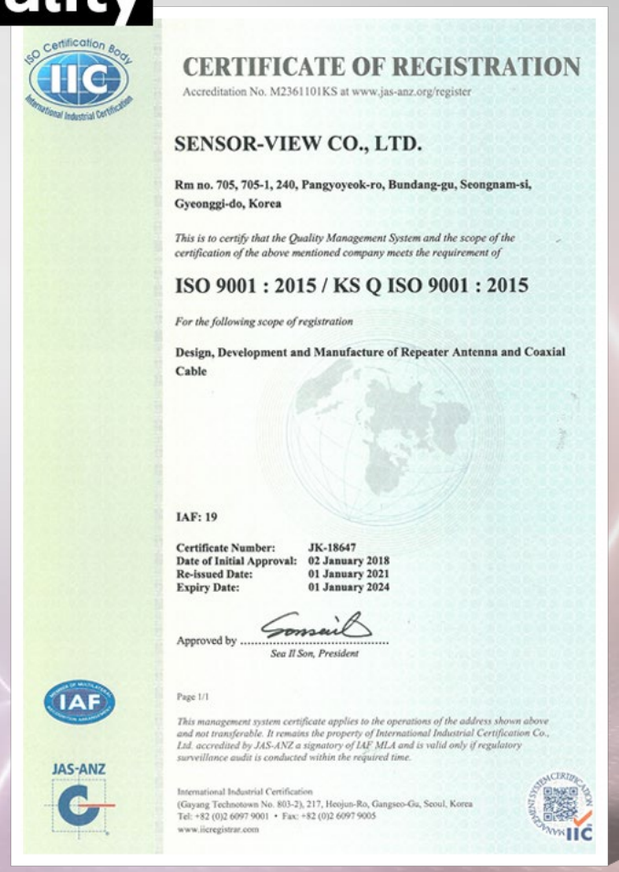
IIC

CERTIFICATIONS

ISO 9001

Quality



ISO Certification Body
IIC
International Industrial Certification

CERTIFICATE OF REGISTRATION

Accreditation No. M2361101KS at www.jas-anz.org/register

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Rm no. 705, 705-1, 240, Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

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For the following scope of registration

Design, Development and Manufacture of Repeater Antenna and Coaxial Cable

IAF: 19

Certificate Number: JK-18647
Date of Initial Approval: 02 January 2018
Re-issued Date: 01 January 2021
Expiry Date: 01 January 2024

Approved by .....
Sea Il Son, President

IAF
JAS-ANZ

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IIC

Selected as ‘2021 Industrial Technology Achievements’ by NAEK

NAEK 한국공학한림원

2021년 우수산업기술성과 최종 선정

15개 기업의 기술이 『2021년 우수산업기술성과』로 선정되었다.
이 중, **전자전기 산업분야에서 삼성전자, SK하이닉스, LG이노텍, (주)센서뷰 4개의 기업이 선정**되었으며
최종 15개 선정된 기업은 다음과 같다.

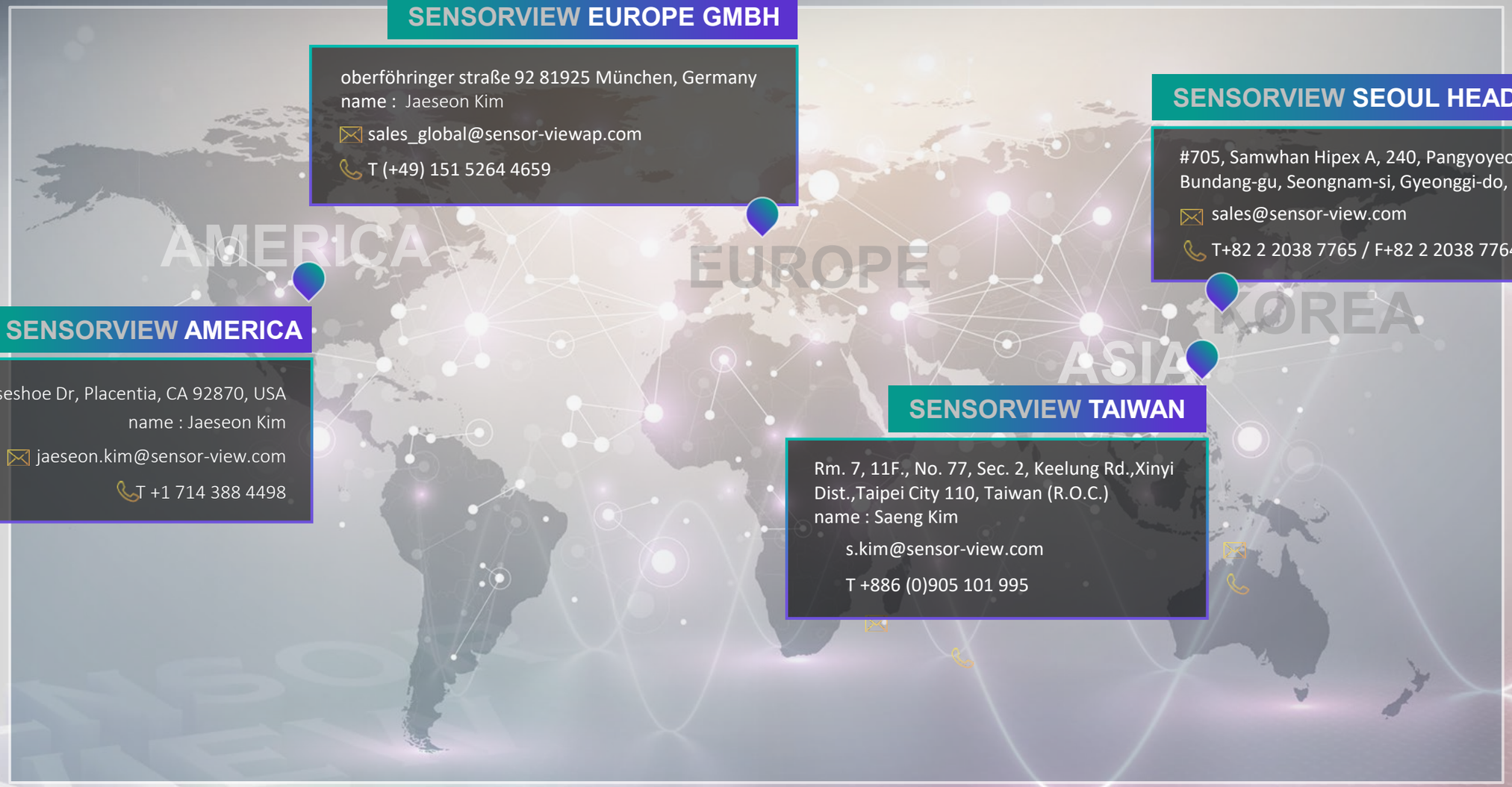
NO.	기 술 명	기 관 명
1	세계 최고 수준의 mmWave 대역 제품 및 기술	삼성전자
2	세계 최초 초고속 DDR5 DRAM 출시	SK하이닉스
3	초슬림 OLED TV용 세계 최고 초박형 자성부품 기술	LG 이노텍
4	세계 최고 수준의 국산 RF 기술로 상용화한 5G용 초소형 전송선로	(주) 센서뷰

NO.	기 술 명	기 관 명
5	세계 최초 LNG 연료 추진 초대형 컨테이너선	한국조선해양
6	전기구동 스마트 CNC 선반 시스템 기술	칸워크홀딩(주)
7	E-GMP (Electric-Global Modular Platform)	현대자동차
8	세계 최고의 급강하 자동착륙기술을 적용한 무인항공기 개발	대한항공
9	세계 최고 수준의 CCTV 기반 하천 자동유량계측 기술	(주)하이드로셈
10	Balanced launchinh gantry를 이용한 거더 2기 동시가설	DL E&C

NO.	기 술 명	기 관 명
11	도로선형 파라메트릭 라이브러리 기반 토목분야 BIM 설계기술	(주)마이다스아이티
12	초소형.저전력 면역화학 분석 시스템	(주)수젠텍
13	수소 전기 모빌리티용 Type4 고압수소저장시스템	(주)일진하이솔루스
14	차세대 전기차 구동모터용 전기강판 셀프본딩 제품기술	포스코
15	10.5세대 대면적 디스플레이용 편광판 보호필름용 및 PET 인라인 공정에 적용 가능한 고기능성 대전방지토팅제	(주)엠버켐텍

NAEK 한국공학한림원

Regional Office



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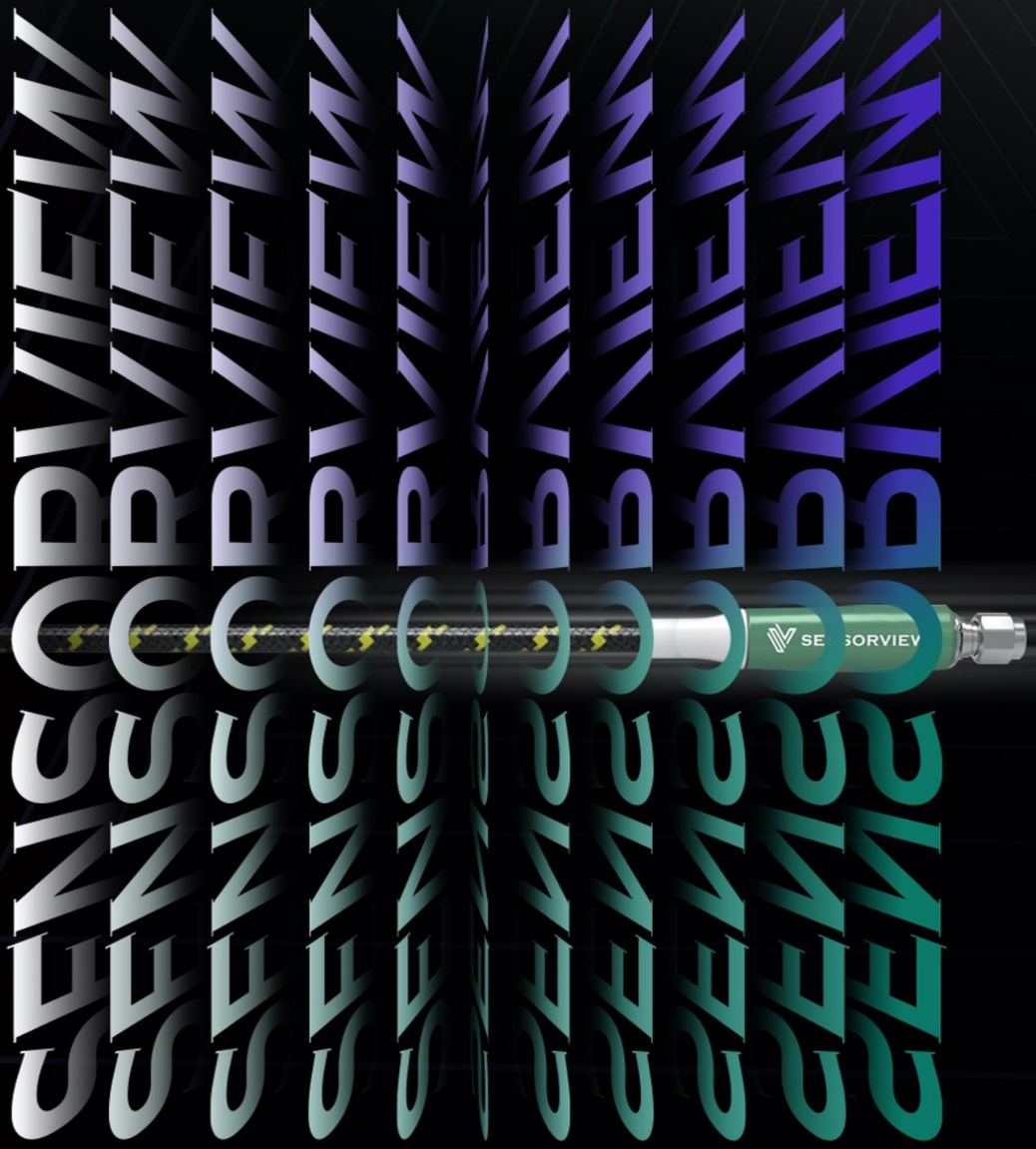

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