 **Address**  
3F, 43, Jukdong-ro 297beon-gil, Yuseong-gu, Daejeon, Republic of Korea

**Bus** Take 704, 912 Get off at the west gate of Chungnam National University - walk 4 minutes  
Take 117 Get off at Jukdong Cheon-nyeon Namu Apartment - walk 6 minutes

**Train** Get off at Shintanjin Station, Take 704  
Get off at the west gate of Chungnam National University - walk 7 minutes

**Self Driving** YUSEONG IC  
Hanbat-Daero 770m - Hanbat-Daero 520m - Jukdong-ro 686m



## COMPANY BROCHURE

# About Us



## The leading company in evolutionary RF technology and components development for KF-X AESA radar

Electronic Device Solution Inc. is a one of the top leader in RF technology that develops and manufactures parts of KF-X AESA radar. We develop components, parts, and modules that need to use in military systems and industrial systems. We have active and passive components that can perfectly control electronic signal. Moreover, we have been dedicated in offering top quality modules. We also can guarantee that our components of product are all made in Korea.

Our priority goal is getting customer's satisfaction for all of our products. We have the technical skills and well prepared employees to respond to customer's demands at all times. Also, we are trying to improve our customer's value rather than our company's own profit or competitiveness.

We have various experiences in developing and manufacturing of RF technology. We hold Quality Certificates of AS9100 and ISO9001. This AS9100 quality certificate proves that we never compromised our process robustness, therefore our product is one of the best in the industry as well. Our company has been established and popular company with an excellent work track record for the best Defense industry. In particular, while developing military products we produced products that have proven to be operating in extreme environments through MIL-STD environment test and EMS test.

In addition, we are trying to develop more efficient products by using materials or parts that are made in Korea and we developed our skills by acquiring Certification of Research Institution and Certification of Korea Venture business as well. We are investing in the development of new products in our overall business.

According to these circumstances, we are working hard domestically and internationally to get intellectual property with our various Certifications and new technologies. Moreover, we are trying to play an important role in the overall industry.

Electronic Devices Solution Inc. will make technical progress in the products because customer satisfaction is the most important role for us. We also care about corporate social responsibility. Therefore, our increased revenue will be shared with society for our better future together.

Thank you.

CEO Byeong-Ok Lim

# CEO (Chief Executive Officer)



Ph.D  
Byeong-Ok Lim

## Essential Career

- Electronic Device Solution Inc. (2018~ )
- GP Inc. (2017~2018)
- Hanwha Systems Inc. (2010~2017)
- Electronics and Telecommunications (2009~2010) Research Institute (ETRI)

1996

- Academic Discipline
- Hankyung National University
- Department of Electronic Engineering

2000

- R&D, Degree Acquisition
- Dongguk University
- Department of Electronic Engineering
- Millimeter wave Technical Research Center

2009

- Product Development
- ETRI : 3D-IC Package
- Hanwha System Inc. : RF Parts/Modules, KFX AESA

2018

- Business Career
- GP Inc. Technical Director
- Electronic Device Solution Inc. Startups

## R&D Items

### Components & Test system for AESA radar (2020)

- GaN HPA MMIC, TRM (Transmitter Receiver Module), Filters, Connectors, AESA radar test System

### KF-X AESA Radar (2019)

- X band GaN Transmit High Power Module

### AESA Radar Prototype Model (2017)

- X band Antenna systems, TRM

### L-SAM Multifunction AESA Radar (2016)

- S band Antenna systems, TRM

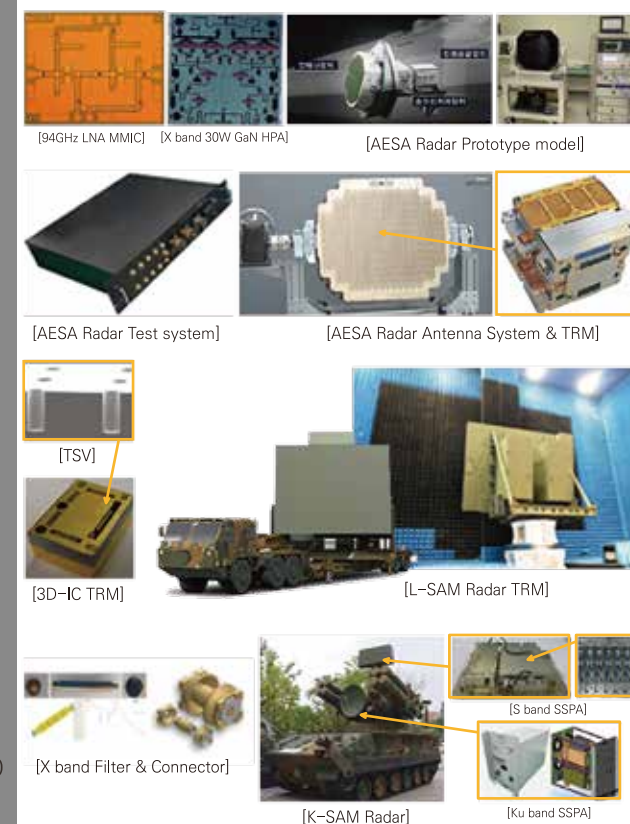
### KSAM Search radar & Tracking Radar Transmitters (2012, 2015)

- S band 2.0kW급 SSPA, Ku band 1.5kW급 SSPA

### X band TRM based on 3D-IC of the TSV (2010)

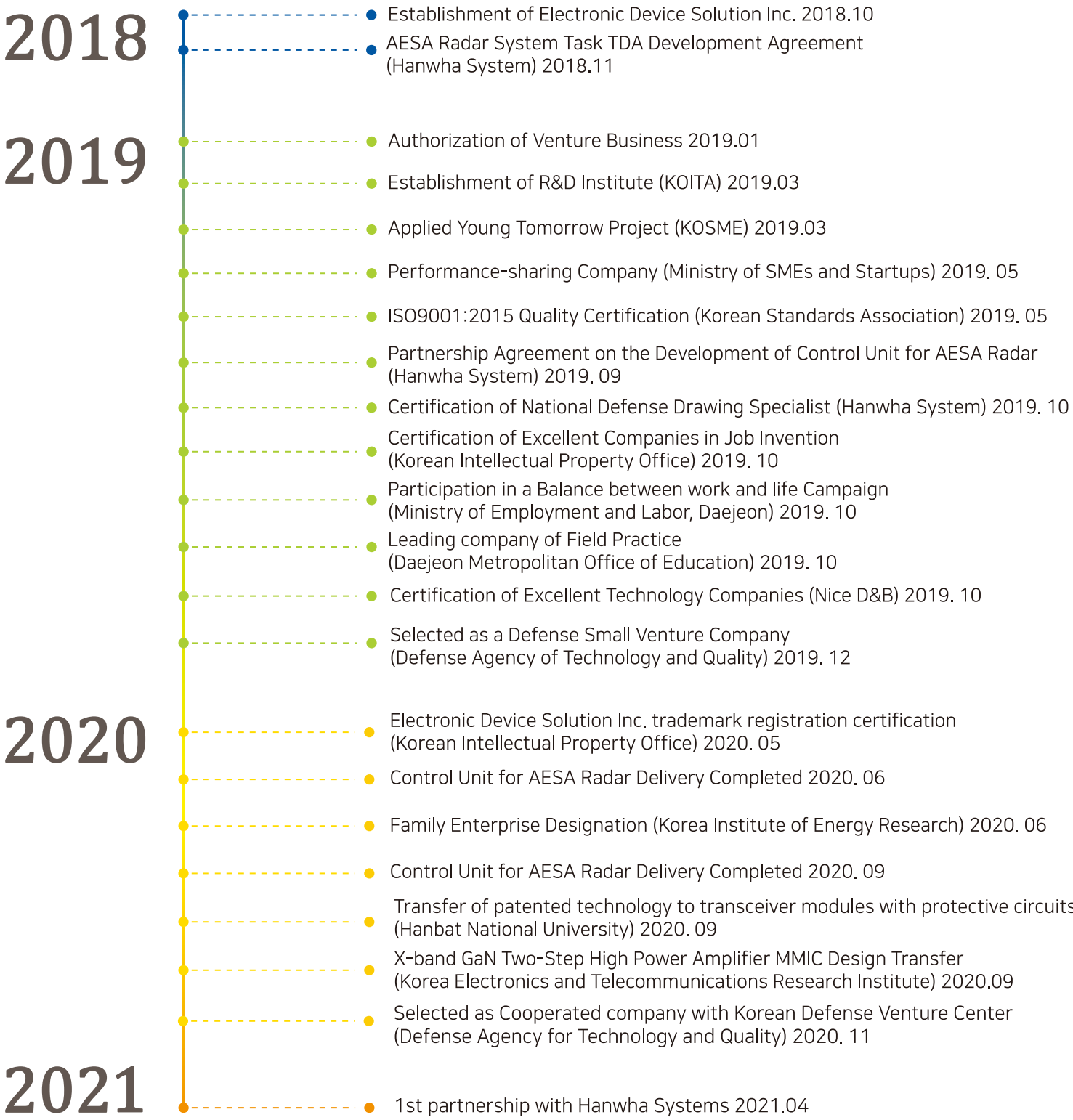
### Millimeter Wave(94 GHz) LNA MMIC and Module (2009)

- AESA(Active Electronically Scanned Array)
- L-SAM(Long-range Surface-to-Air Missile)
- TSV (Through Si Via)
- MMIC(Microwave Monolithic Integrate Circuit)
- TRM(Transmit Receive Module)
- K-SAM(Korean short-range Surface-to-Air Missile)
- LNA(Low Noise Amplifier)



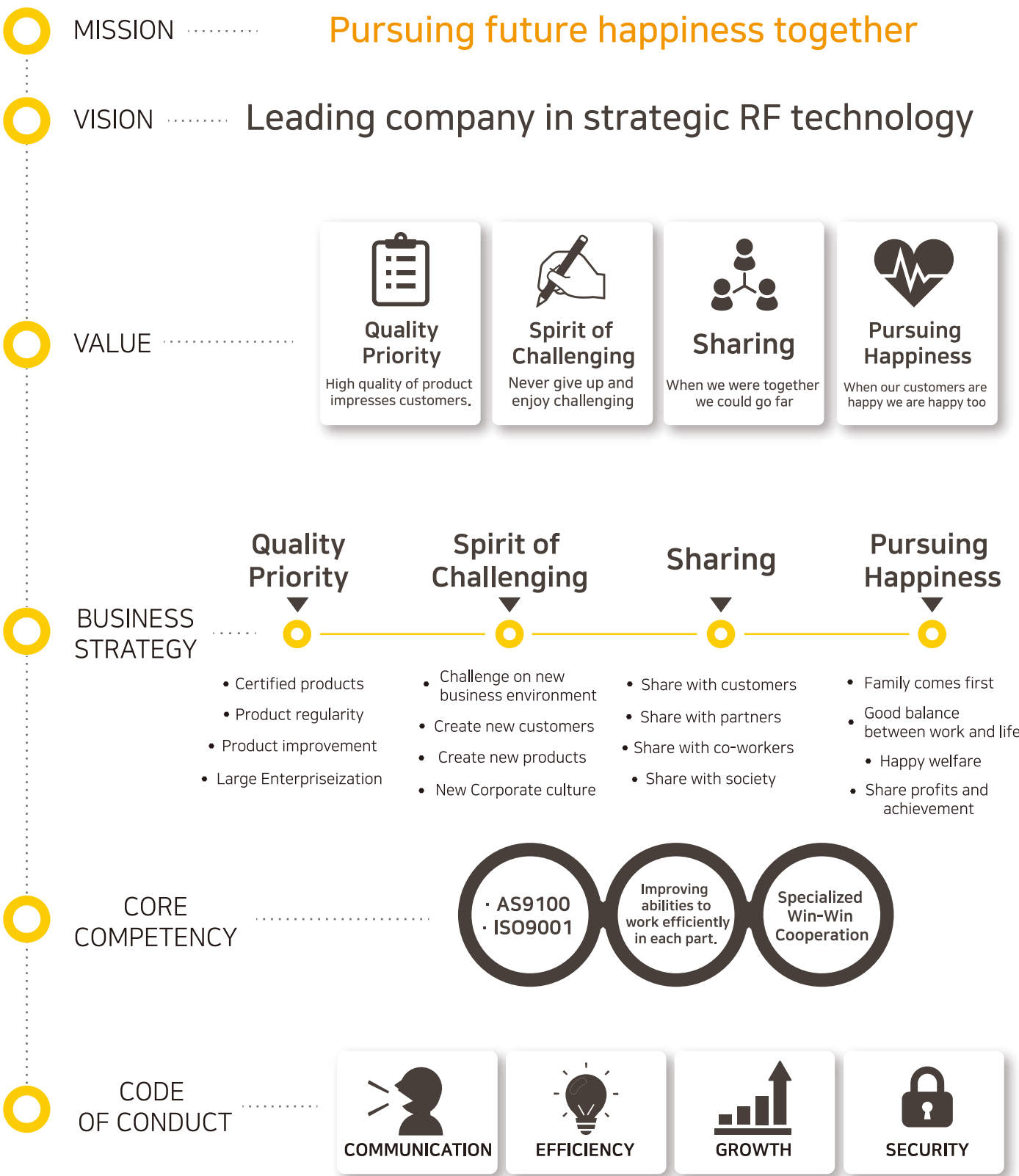
# Company History

■ We search for new and improved best practices to become the best in the industry.



# Business Goal

■ We have it's quality vision and mission to thrive in the future



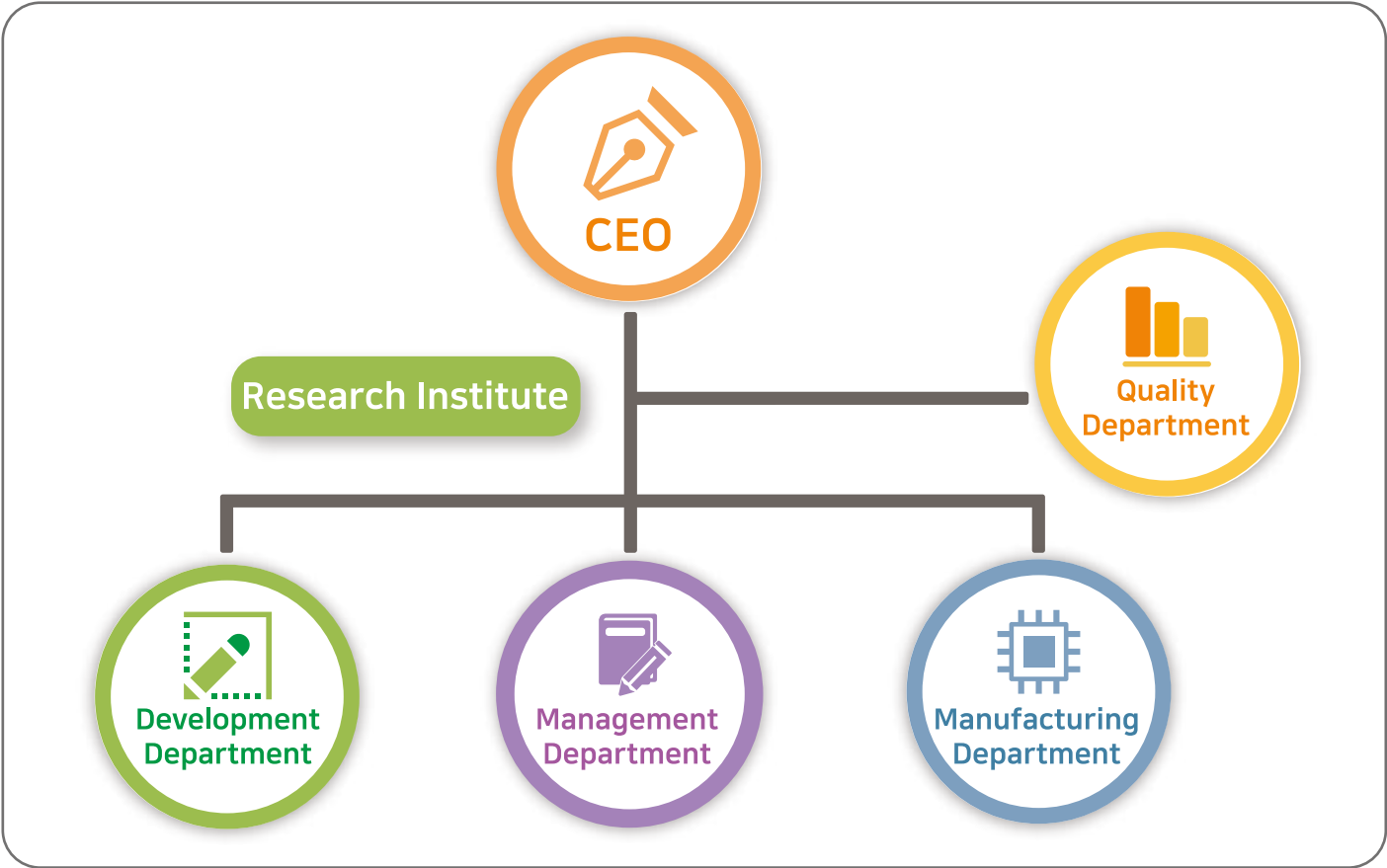
# Management Ideology

■ This explains guiding principles and fundamental beliefs of us.



# Organization Chart

■ This is our systematic organizational chart.



CEO	Development Department	Management Department	Manufacturing Department	Quality Department
<ul style="list-style-type: none"><li>Establish policies and direction for product quality</li><li>Commanding and supervising product directions to all department to help understanding</li><li>Arrange employees and resources at the right place for better result and products quality</li><li>Review the status of products quality regularly</li><li>Maintain a leader role and take care of complaints and issues.</li></ul>	<ul style="list-style-type: none"><li>Management of client assets</li><li>Write and manage estimate sheets, contracts, and order reports</li><li>Responsible for product drawing sketches</li><li>Overall customer services</li></ul>	<ul style="list-style-type: none"><li>Create policies and report work result on each departments</li><li>Business Management review and report related information</li><li>Manage accounting and assist overall work</li><li>Partnership management</li><li>Managing and reporting transaction sheet</li><li>Manage supplier and purchaser</li></ul>	<ul style="list-style-type: none"><li>Supervising field workers and process</li><li>Safety education</li><li>Identifying materials in products during the process and managing traceability</li><li>Establish a work plan and manage the progress of work</li><li>Facilities and equipments management</li><li>Write process management sheet (Traveller)</li><li>Identify and manage unprocessed materials, finished goods, and in stock items.</li></ul>	<ul style="list-style-type: none"><li>Planning and supervising Quality Management System</li><li>Check quality management manual and work process</li><li>Find problems on quality management system and resolve</li><li>Testing and reporting overall process</li><li>Establish internal testing. Also, report results and non-conformance papers and examine the corrections.</li></ul>



# Facilities

There are our facilities.

## Research Institute



Research Institute



Reception room

## Office of Business Support



Office of Business Support



Meeting room

## Laboratory and Manufacturing Room



Material storage



Assembly



Component SMT



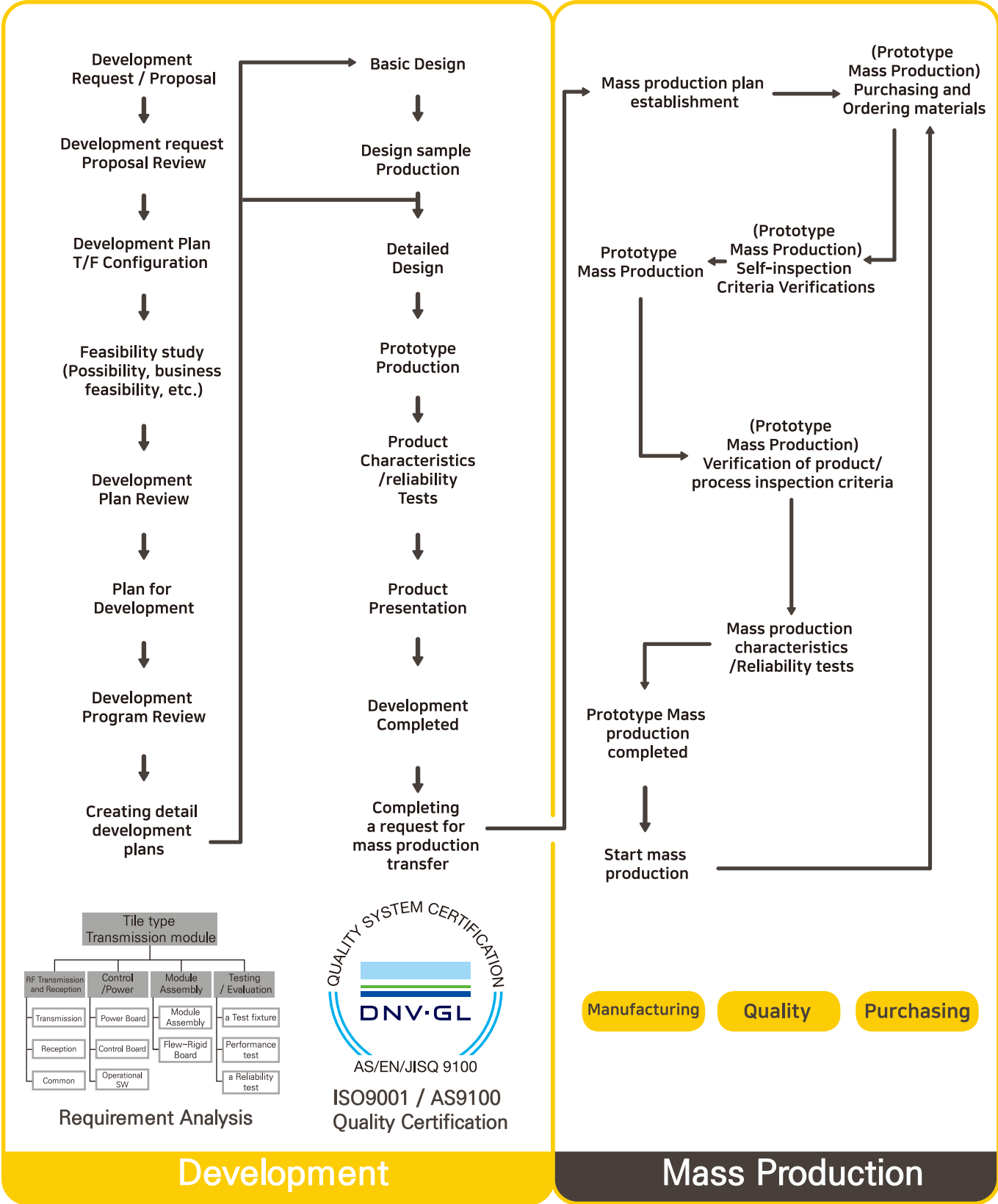
Test



Product inspection

# Business Capability

This is our development and mass production process.



# Main Products

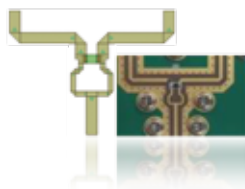
Introducing the main products of Electronic Device Solution Inc.

## Device



### 01 Active Device

- GaN Transistor
- GaN MMIC
- LNA, HPA, ...



### 02 Passive Device

- RF Filter(LPF, HPF, BPF)
- Power Combiner/Divider
- Hybrid Coupler

## Component



### 01 Specialized Bullet Connectors

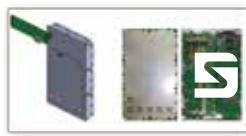
- Built-in filter
- Short length
- Long length



### 02 RF/DC Connector

- SMA, BMA, MBX, MMBX
- SMP, SMPM, DIN, N-type
- Press-Fit Type, Customized Shape Type

## Module



### 01 RF Module

- Drive Amplifier
- High Power Amplifier
- Transceiver Module



### 02 Testing Equipment

- Multi-channel Amplifier
- Power Detector
- Test Fixture

## Service



01

- Proposal
- Technology research
- Investigate Patent



02

- RF, Power, Module
- Artwork, Electromagnetic Analysis
- 2D, 3D Modeling



03

- PCB
- Prototype
- Module



04

- Performance Test
- Environmental Test
- Customer Test Support

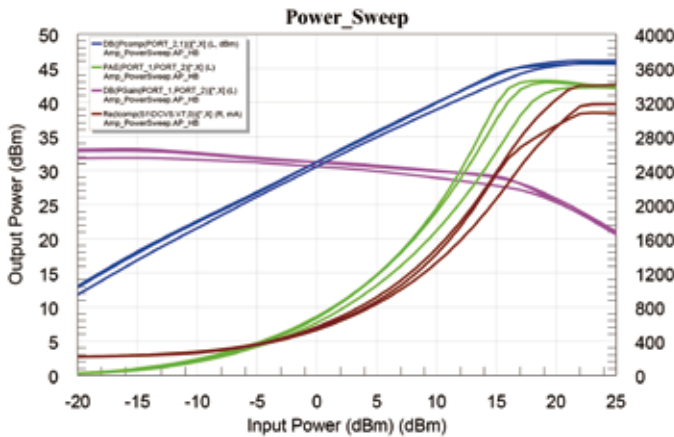
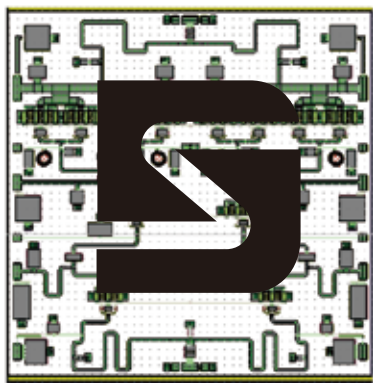
# Main Products

Production and test of High Power Amplifier MMIC.

## Product Standard

· Frequency	X-band (0 GHz ~ 00 GHz)	· PAE (%)	≥ 40
· Output power (dBm)	≥ 44.8	· Drain voltage (V)	28
· Output power (W)	≥ 30	· Gate voltage (V)	-2.3
· Small signal gain (dB)	≥ 30		
· Drain eff. (%)	≥ 40		

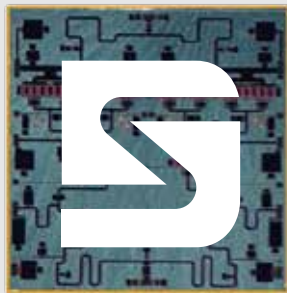
## Product Design



## Measurement and Performance Analysis



16-Channel Transceiver Module (Hanwha Systems)



X Band HPA MMIC die

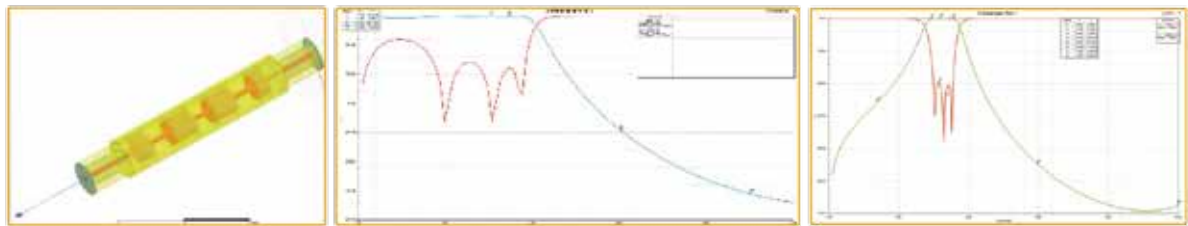
# Main Products

Connectors with built-in filter

## Product Standard

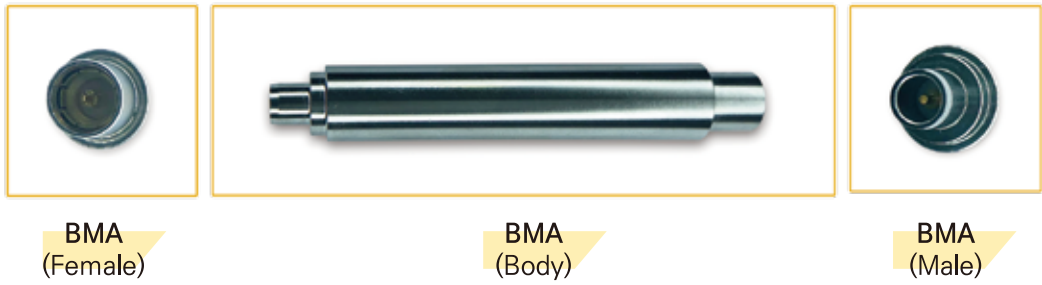
- Pass band DC ~ 3.5 GHz (LPF), 2.9 ~ 3.5 GHz (BPF)
- Return loss 15dB min
- Connector type BMA bullet
- Attenuation  $\leq -45$  dBc (6 GHz),  $\leq -65$  dBc (9 GHz)
- Insertion loss  $\leq 0.5$  dB,  $\leq$  Ripple 0.2 dB
- Input output impedance 50 ohm

## Product Design



2D, 3D Simulation Design

## Product Photograph



## Similar Product Line

- X band BPF 9.0 ~ 10.0 GHz
- Ka1 band BPF 27.5 ~ 28.5 GHz
- Ku band BPF 15 ~ 17 GHz
- Ka2 band BPF 34.5 ~ 35.5 GHz

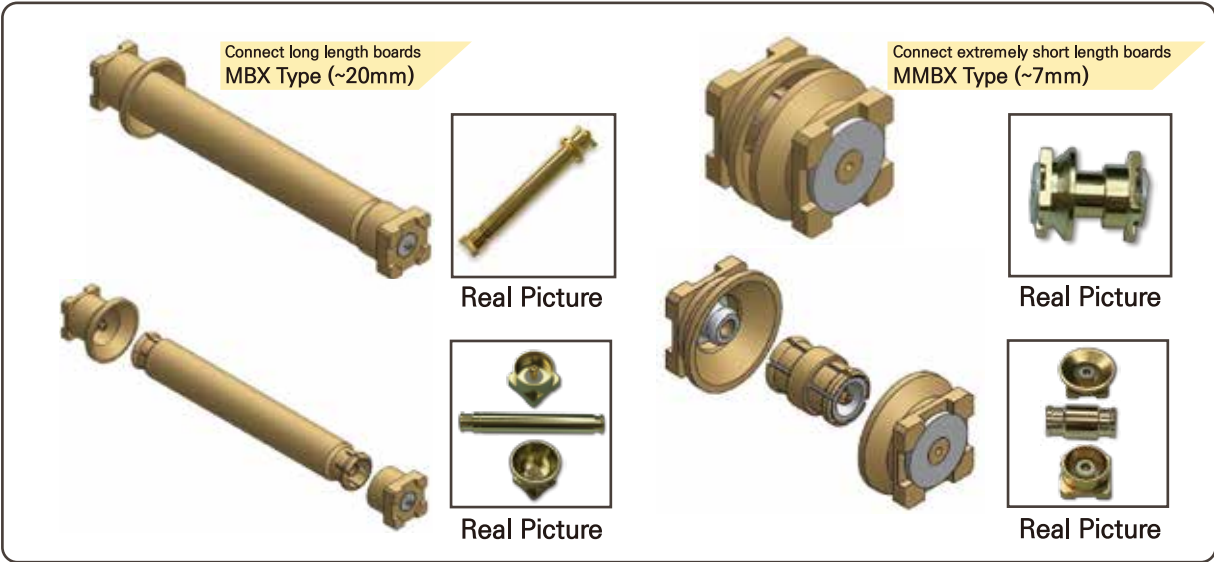
\* Frequency and Filer types are Changeable

# Main Products

Customized Connectors and Adapters.

## RF Connector

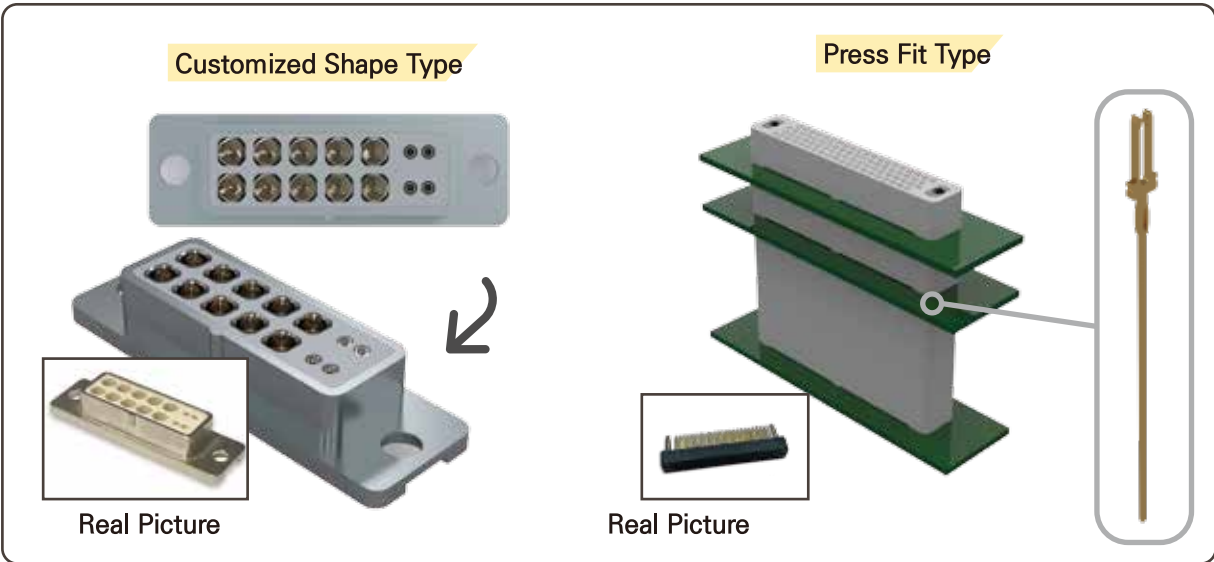
- Board to Board Connector (SMD / Bullet / SMD)



\* Connector types are changeable

## DC Connector

- Customized Connector





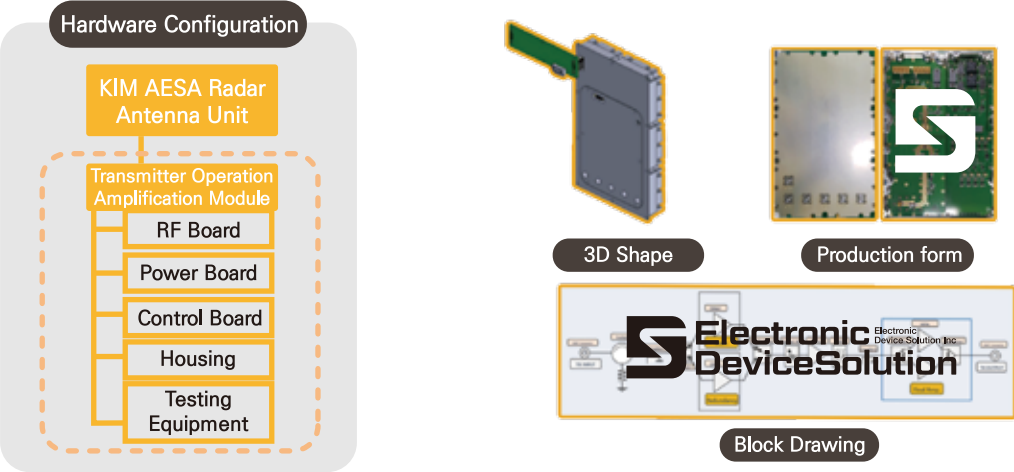
# Main Products

Development of Transmitter Operation Amplification Modules for KF-X AESA radar.

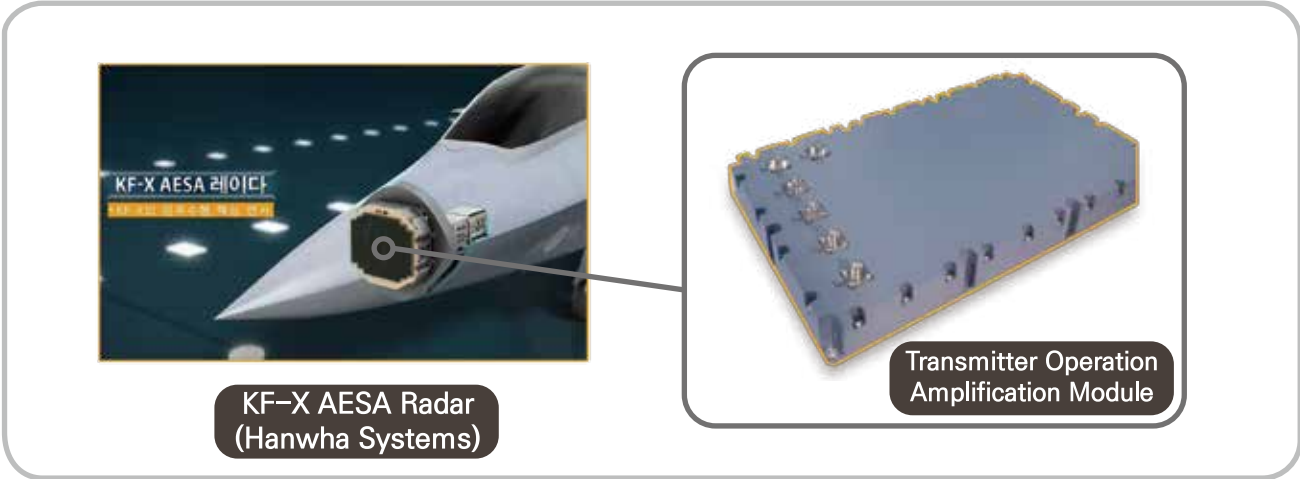
## Product Standard

· Frequency	X-band (0 GHz ~ 00 GHz)	· Function	Control by system mode, Collect information status, Power protection
· Input Power	0.0 dBm	· Size	000.0 × 000.0 × 00 mm3
· Output Power	00 dBm	· Weight	≤ 0.0kg
· Duty	≤ 00% (PRI : 0000us, PW 000us)	· ENV. Test	Compliance with MIL-STD 810G
· Droop	≤ 0 dB	· EMI. Test	Compliance with MIL-STD 461F

## Product Design



## Product Photograph



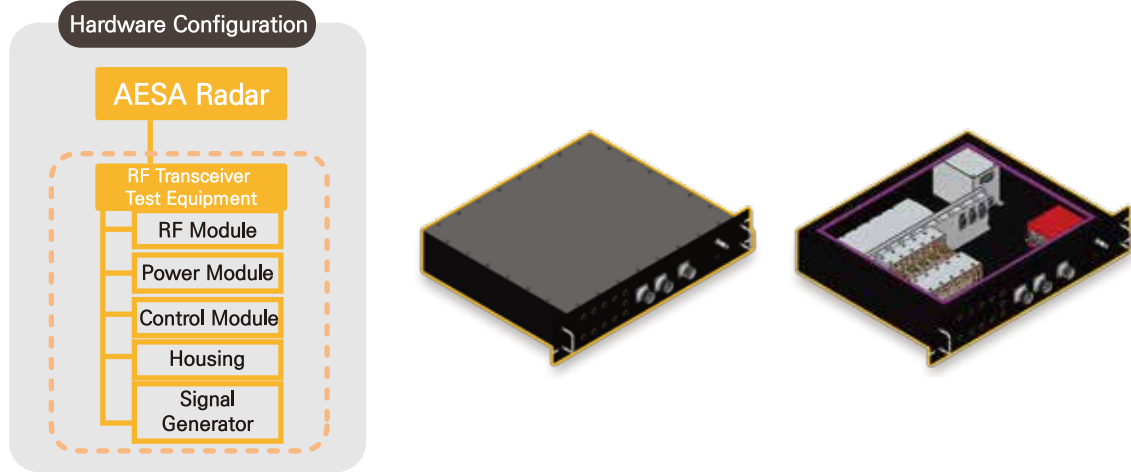
# Main Products

RF Transceiver Test Equipment for AESA radar.

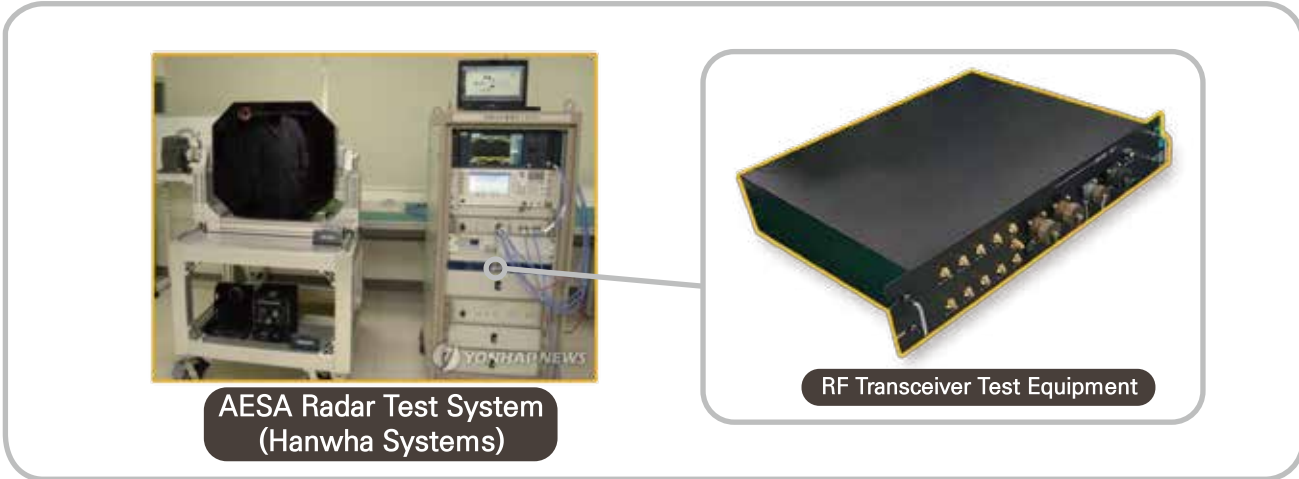
## Product Standard

· Frequency	X-band (9 GHz ~ 10 GHz)	· Size	Standard 2U Rack
· RF Module	6 Channel (Tx : 1ch. / Rx : 4ch. / S.G : 1ch.)	· Weight	≤ 7 kg
· Output power	≥ 40 dBm (Tx), ≥ 10 dBm (S.G)	· AC Input	220V, 60 Hz
· Gain	≥ 25 dB (Rx)	· ENV. Test	Compliance with MIL-STD 810G
· Function	Individual control by channel, State information collection, Power protection, etc.	· EMI. Test	Compliance with MIL-STD 461F

## Product Design



## Product Photograph





# Partnership

Introducing our reliable business partners.

Partner Company

We create future together.



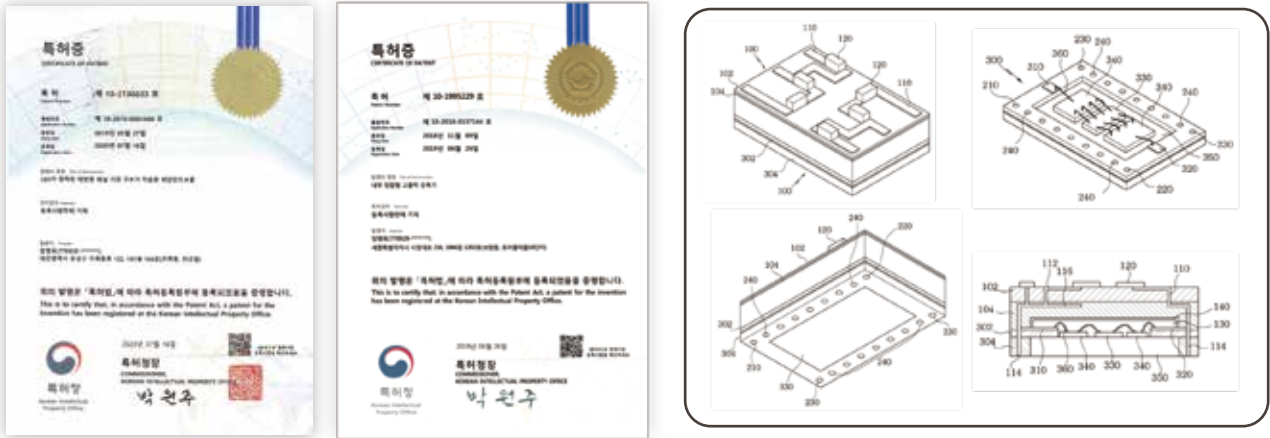
Electronic Device Solution Inc. will keep partnership up with Hanwha System and we will continue the research on high-tech defense electronics and IT fields of smart technology for safer and comforter future. Moreover, we want to lead innovation of the era of the Fourth Industrial Revolution together. Our company made the development agreement and progressed about KF-X AESA radar system TDA development and the Control Unit for AESA radar system.

## Partners



# Intellectual Property

We have various intellectual properties with constant researching and developing.



The Patent Title	
①	High power amplifiers with internal converging
②	Radio Power Transmission System with Active Phased Array Structure
③	Location Information-Based Radio Power Transmission System
④	High power amplifiers with internal converging (PCT)
⑤	LED solar panel board structure
⑥	Transceiver Module for Active Phased Array radar with Flex-rigid board
⑦	Operating System with Smart Solar Cell Modules
⑧	Solar Cell modules with Solar Cell Fault-Avoidance Circuit Structure.
⑨	Electronic Device Solution Trademark Registration (English)
⑩	Electronic Device Solution Trademark Registration (Korean)
⑪	Transceiver Module with Protection Circuit
⑫	Integrated RF Connectors with Built-in RF Filters and RF Transmission Channel Assembly
⑬	RF Connector With Filter Gap Fixed Dielectric Filter
⑭	Signal Control Unit with Signal Generator
⑮	Signal Control Unit with Signal Analyzer
⑯	Positioning and Movement Direction Identification System with Satellite Synthetic Opening Radar
⑰	Location Identification System with Satellite Synthetic Opening Radar
⑱	Method of measuring the velocity of a mobile device with synthetic aperture radar
⑲	Low-pass filter
⑳	Connector Design
㉑	Filter embedded connector
㉒	BPF Bullet Adapter
㉓	Filter embedded connector (PCT)

# Certifications

■ We are always trying to develop.

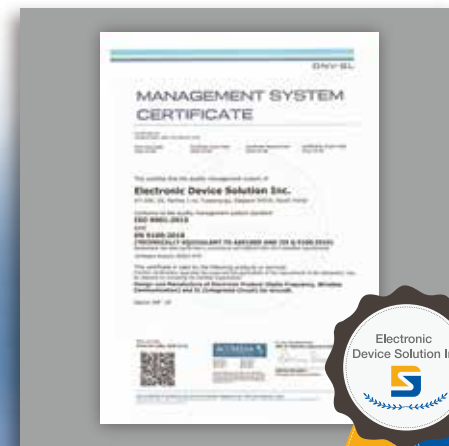


# EDS News

■ Updated news from Electronic Device Solution Inc.

## “Acquire AS9100 Certification”

Electronic Devices Solution Inc. is officially registered with OASIS after acquiring AS9100 quality certification and verified quality ability by DNV·GL, an official certification authority.



## “1st partnership with Hanwha Systems”

Electronic Device Solution Inc. is pleased to announce it's new partnership with Hanwha System, one of the largest defense technology providers in Korea. Hanwha Systems is a global company based in South Korea providing defense electronics and smart ICT solutions. We will be working together with Hanwha Systems with trust and faith and we will cooperate with each other down the road as well.



New Partnership