DYMSTEC

www.dymstec.com / www.dynamicshielding.com

MAINBiz 경영혁신형 중소기업

INNOBIZ 기술혁신형중소기업

COMPANY PROFILE

DYMSTEC

① COMPANY SUMMARY ② BUSINESS AREA ③ COMPANY HISTORY ④ ORGANIZATION CHART

www.dymstec.com / www.dynamicshielding.com

MAINBiz 경영혁신형 중소기업

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COMPANY SUMMARY

WE DO OUR BEST TO CREATE ADDED VALUE FOR OUR CUSTOMERS AND
GROW TOGETHER WITH A SHARED VISION

Company Name	Dymstec Co., Ltd.
Date of Establishment	1995. 12
Chairman / CEO Chief Executive Officer	Young-Bae Song / Seong-Jong Song
Number of Employees	92
Head Office Address	Kranztechno #1308, 388 Dunchon-daero, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13403, Korea
Factory Address	118 Yongsu-ro, Wonsam-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17176, Korea
Business Area	Anechoic EMC test chambers & RF shielding room construction / Information and communication engineering / Wireless communication equipment / Electronic communication device / SW Development
License	Management Innovation Business Certification / Technology Innovation Business Certification / Mechanical equipment and electric construction license / Information and communication construction license / ISO 9001: 2015 quality control certification / Software business license

BUSINESS AREA

Anti-Drone/RF Jammer

Provide an integrated anti-drone system for proactive response to drone reconnaissance, intrusion, terror threats, and a wide range of RF Jamming system : Portable Vehicle EOD Jammer

EMC/RF Shielding

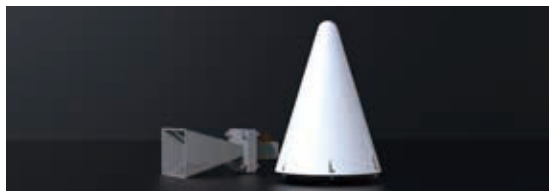
Turnkey projects for RF shielding rooms and Anechoic EMC test chambers that meet international standards

EMP Protection

From high-altitude nuclear explosion and non-nuclear electromagnetic pulse attack threats, EMP Rack provides an environment that can protect and manage the major info-communications equipment

ICT Solutions

Provide a wide range of solutions for evaluating SAR (Specific Absorption Rate) and OTA (Over the Air) performance for wireless communication compliance/development test



Antenna

Provide a high-quality, high-performance satellite and commercial antennas.
Communication, monitoring, direction finding, mobile antennas, etc.

COMPANY HISTORY

- 1995 Foundation of Dymstec Co., Ltd.
  Registered as a military security company
- 1996 Made an exclusive sales agreement with SPEAG
- 1998 Built a DASY SAR qualified certification assessment system
- 2000 Provided a 3D Full-wave EM/Thermal analysis simulation SEMCAD X to Samsung Electronics, LG Electronics and ETRI
- 2004 Registered as a wireless communication device and broadcasting company
- 2006 Provided a fast SAR measurement solution to Samsung Electronics and LG Electronics (Registered on SAM)
- 2008 Made an exclusive sales with Bluetest
- 2009 Installed OTA chambers for Samsung Electronics, LG Electronics, SK Telecom, etc.
- 2010 Installed OTA chambers for Samsung Electronics in India, Brazil, China and Vietnam
- 2011 Established SCALK and began fast SAR calibration service in Asia and South America
- 2012 Acquired the SCALK IEC17025 SAS certification
- 2013 Established Dymstec R&D Center
  Acquired a license for information and communication construction business
- 2014 Registered as a software development company
  Acquired a license for mechanical equipment and electric construction business
  Established an EMC/EMP factory
- 2015 Installed 3m EMC chambers and RF shielded rooms for KTR, BV Korea and KES
  Developed a HVAC built-in protection rack
  Installed an EMP protection facility for a Korean military project
- 2016 EMP protection facility construction service for government project
- 2017 Relocated and expanded the EMC/EMP factory
  Installed 10m and 3m EMC chambers and RF shielded rooms for Ntree and KES
  Installed 5G OTA chambers for Samsung Electronics
  Installed EMP protection racks for a Korean government project
  Supplied RF jammers to the Korean Presidential Security Service
  Supplied Drone Hunter to the Korean National Police Agency
- 2018 Installation service of EMP shielding rack for major financial institutions
  Development of built-in-battery type anti-drone gun solutions
  Installation service of EMP protection rack/mobile shelter solution for government project
  Establishment of 5G SAR certification evaluation system for SAMSUNG/LG electronics
  Received an award certificate from the Minister of Science recognized for its contribution to the National EMP protection related business
- 2019 Exported Drone Hunter X to Saudi Arabia
  Designed EMP protection racks for a government 2nd project
  Designed EMP protection of an airbase
  Established 5G OTA performance evaluation system for Samsung Electronics and SKT
- 2020 Installed a 28 GHz band (5G mmWave) chamber to the National Radio Research Agency
  Installed a RF shielded room for Radio Signal Playground of Korea Radio Promotion Association
  Exported an IED jammer to the Polish Police Agency
  Supplied Drone Hunter XR to the Korean Ministry of National Defense
- 2021 Exported Drone Hunter FD to Singapore
  Exported an IED jammer to the Polish Police Agency
  Acquired the MAINBIZ certificate as a managerial innovation enterprise
  Acquired the INNOBIZ certificate as a technological innovation enterprise
- 2022 Exported Vehicle jammer system to Indonesia
  Exported Satellite Phone Jammer to Singapore
  Battery-integrated anti-drone gun designated as Innovation Product and registered in the Procurement Service
  Battery-integrated anti-drone gun designated for trial use of the military superior product
- 2023 Exported Vehicle jammer system to Malaysia
  Installation of EMP shielded racks for Korea Securities Depository
  Establishment of EMP protection facilities for customers

ORGANIZATION CHART

CEO

PRESIDENT

Management

- Quality Control
- Customer Service

IT Security

VICE PRESIDENT

Management Planning

- Management Support
- Sales Support
- Financial Management
- Purchasing
- Cost Management
- Design

Anti-Drone

- Public Business
- Domestic Sales
- Overseas Sales
- Engineering Support

R&D

- System Development
- S/W Development
- Antenna Development
- Preceding Research

ICT Solution

- SAR Sales
- EMF Sales
- OTA Sales
- MED Sales

EMC/EMP

- EMC Sales
- EMP Sales
- Construction
- EMP Business Management

Manufacturing Factory

- Manufacturing
- General Affairs
- Processing
- Material Management
- Production Engineering

ANTI-DRONE SOLUTIONS

ANTI-DRONE

① DETECTION ② IDENTIFICATION ③ NEUTRALIZATION ④ VEHICLE SOLUTION

⑤ C2 SYSTEM SOFTWARE ⑥ ANTI-DRONE + EMP PROTECTION SOLUTION

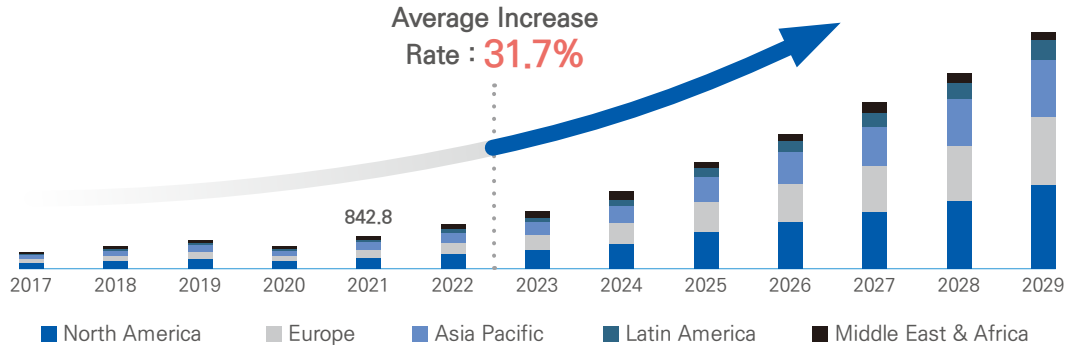
⑦ RF JAMMER ⑧ INTELLECTUAL PROPERTY RIGHTS AND AWARDS

MISSION & MAIN TARGET MARKET

OUR MISSION

To provide the most advanced and reliable counter drone system to ensure public safety against the drone threats.

- A great deal of drone threats are increasing worldwide such as terrorism, surveillance, reconnaissance, etc.
- Global demand for anti-drone systems for protecting critical infrastructure and civilians an average increase rate of 31.7% every year.
- Target markets : defense, security, and public sectors
- Mission : "Provision of defect-free jammers operating in any environments to our customers"



*Source : Polaris Market Research Analysis

Anti-drone Market Size, By Region, 2017 ~ 2029 (USD Million)

MAIN TARGET MARKET

Major Demand for Anti-Drone Solutions and RF Jamming System

- Protect national critical infrastructure, including energy and key industrial infrastructure
- Protect vehicles and embassy facilities as a means of protecting VIPs
- Protect multi-use facilities exposed to threats such as airport and stadiums to prevent human casualties
- Protect border areas requiring security and protection, such as military bases, prisons, etc


Power Plant


Critical Infrastructure


VIP Protection


Embassy


Airport

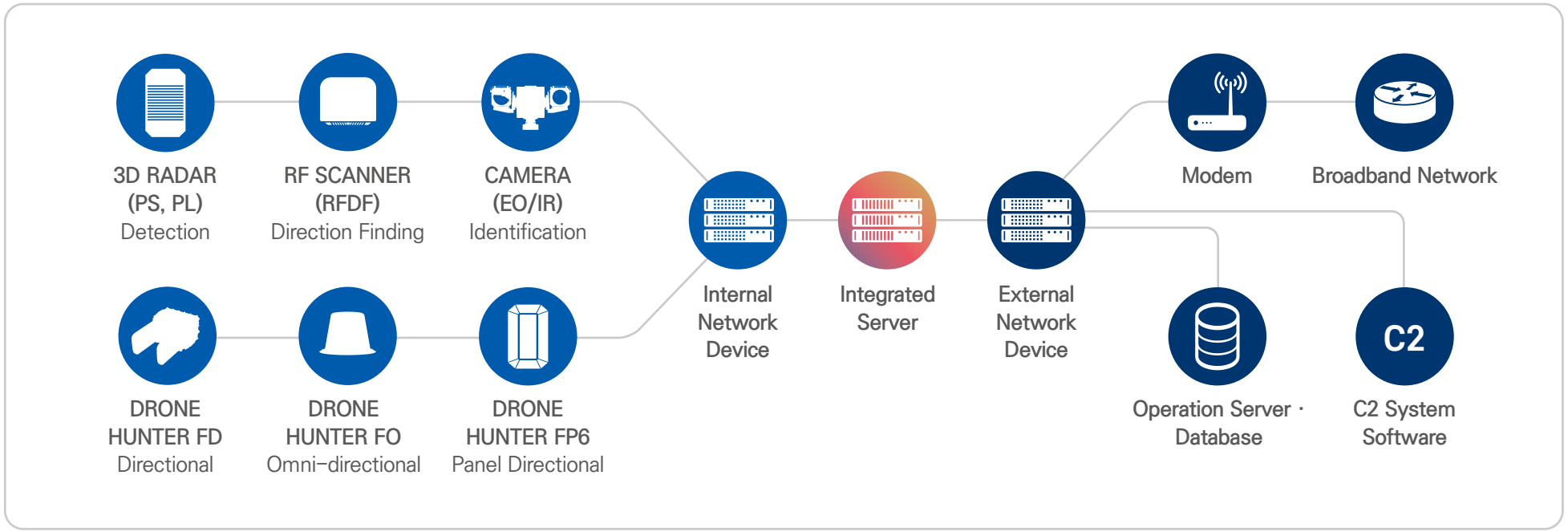

Arena


Correctional Facility


Military Base & Border

ANTI-DRONE SYSTEM CONFIGURATION

DETECTION·IDENTIFICATION·NEUTRALIZATION·CONTROL



DETECTION
360° azimuth detection data transmission

IDENTIFICATION
Day/Night Identification and Tracking Image Acquisition

NEUTRALIZATION
Jamming
(GNSS, Control Signals Blocking)

OURANOS™ 3D RADAR (PS / PL)

C-UAS SYSTEM 3D RADAR FOR DETECTION, TRACKING AND CLASSIFICATION OF DRONES

AESA RADARS

FEATURE

Easily expandable. (It can be customized to user requirements)

- The flat panel structure for easy expansion
- Application of high performance tile-type RF module

Electronic beam steering (Adaptable to the clutter environment, target detection and tracking)

- Active Electronically Scanned Array (AESA) technology used in modern military radar
- Azimuth and elevation, electron beam radiation/reception in any direction
- Minimizing the possibility of false detection by minimizing side lobe effects

Application of High-performance radar technology

- Azimuth/elevation monopulse technology for high accuracy
- Application of sidelobe Blanking technology to minimize false detection
- Automatic beam alignment function
- Search/Tracking/Precise tracking (Smart beam operation)
- Adjustable search range (Radar beam transmission/reception only for the desired search area)
- Ability to concentrate detection ability in a specific desired area

OVERVIEW

The PS and PL are FMCW type radar and were developed to detect/track small air targets. The major difference between two models is detection performance. PL have four times larger radar budget than PS. Both have compact and lightweight physical architecture that concentrates all the components required for radar, such as antenna, RF components and radar signal processor, in a small single housing. Transport can be carried in the carrier box and can be easily carried by one person. For installation, you can use a commercially available camera tripod. The weight is about 7.5kg (PS) and 15.9kg (PL), and the lower connection part is compatible with the tripod connection for the camera. Power supply requires 12VDC (PS) and 24VDC power (PL). When using a battery, it is possible to connect a 12V battery or 24V battery to radars. Usage time may vary depending on the battery capacity.

Transfer of Status and BIT information and simple control of the PS and PL are possible with a web browser using the Ethernet connection for authorized users. Using the terminal program provided with the radar, you can view the radar control and detected target information in real time.

OURANOS™ 3D RADAR (PS/PL)

C-UAS SYSTEM 3D RADAR FOR DETECTION, TRACKING AND CLASSIFICATION OF DRONES

OURANOS™ 3D RADAR PS	
Detection Range	1.5km @ RCS 0.01m² (DJI Phantom). 2.5Km @ RCS 0.03m², Pd 0.9, Pfa 10e-6
Instrument Range	4.0km
Detection Accuracy	Azimuth〈1.0 degree, Elevation〈2.0 degree, Range〈1.5 m
Frequency / Bandwidth	Frequency can be set from 8.5GHz to 8.6GHz or 9.3GHz to 9.8GHz by User, Bandwidth is less than 60MHz
Transmit Power	Peak 20W, Average 10W
Coverage Area (1 Panel) / Scan Time	Low Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 20 / Scan Time: 0.55 sec / scan
	Mid Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 40 / Scan Time: 1.10 sec / scan
	High Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 60 / Scan Time: 1.54 sec / scan
Number of Tracks	100
Look Down Capability	Elevation Angle can be lower than 0 degree. / Thus elevation Coverage -5 ~ 55 is possible.
Classification	Ground Target / Air Target with Probability of Drone
Radar Type and Function	Panel Type : 3D FMCW Radar / Active Electrically Phased Array / Pencil Beam / Azimuth and Elevation Monopulse / Data Recording
Power & Interface	Power 12VDC. Power consumption : Data Interface : Ethernet TCP/IP
Information	Radar Status, Plot, Track
Weight	7.5kg
Size	187 mm (W) x 327mm (H) x 110 mm (D) / 303mm (W) x 549mm (H) x 108mm (D)
Operation temperature	-20°C ~ 50°C

OURANOS™ 3D RADAR (PS/PL)

C-UAS SYSTEM 3D RADAR FOR DETECTION, TRACKING AND CLASSIFICATION OF DRONES

OURANOS™ 3D RADAR PL	
Detection Range	3.5km @ RCS 0.01m² (DJI Phantom). 5.0Km @ RCS 0.03m², Pd 0.9, Pfa 10e-6
Instrument Range	8.0km
Detection Accuracy	Azimuth〈0.5 degree, Elevation〈1.0 degree, Range〈3.5 m
Frequency / Bandwidth	Frequency can be set from 8.5GHz to 8.6GHz or 9.3GHz to 9.8GHz by User, Bandwidth is less than 30MHz
Transmit Power	Peak 80W, Average 40W
Coverage Area (1 Panel) / Scan Time	Low Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 20 / Scan Time: 1.0 sec / scan
	Mid Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 40 / Scan Time: 2.0 sec / scan
	High Elevation Mode : Azimuth -50 ~ 50, Elevation 0 ~ 60 / Scan Time: 2.8sec / scan
Number of Tracks	200
Look Down Capability	Elevation Angle can be lower than 0 degree. / Thus elevation Coverage -5 ~ 55 is possible.
Classification	Ground Target / Air Target
Radar Type and Function	Panel Type : 3D FMCW Radar / Active Electrically Phased Array / Pencil Beam / Azimuth and Elevation Monopulse / Data Recording
Power & Interface	Power 24VDC. Power consumption : 500W / Data Interface : Ethernet TCP/IP
Information	Radar Status, Plot, Track
Weight	15.9kg
Size	303 mm (W) x 549mm (H) x 108 mm (D)
Operation temperature	-20°C ~ 50°C

OURANOS™ RFDF SCANNER

REALTIME DRONE DETECTION AND DIRECTION FINDING SYSTEM

OVERVIEW

OURANOS™ RFDF is designed to detect and direction-find commercially available drones and control signals. RFDF has dedicated processing resources and proven operation references in the urban environment. RFDF provides user-friendly control interface and available to deploy in various configuration such as mobile / stationary / portable. It is an integrated feature for detecting, classifying and tracking drones, locating the controller and classifying the drone manufacturers and model numbers.

The location of drone and remote control can be determined with multiple sensors through triangulation. Automatic operation and remote notification are available through the OURANOS™ C2 system

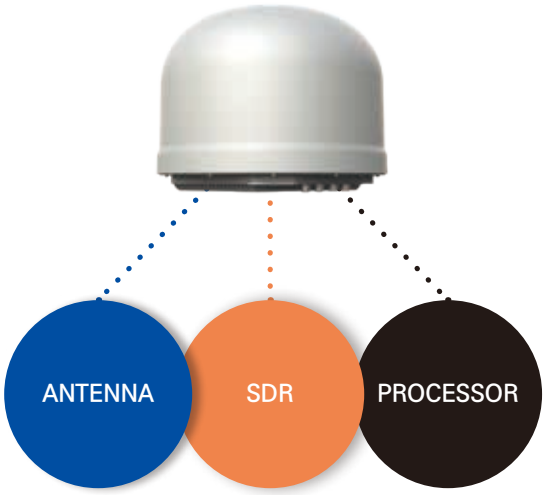
FEATURE

- Proven operation references in urban environment
- Geolocation estimation of drone and controller with multiple sensors
- Drone classification function and continuous drone library update
- User-friendly, simple operation and easy to deploy

OURANOS™ RFDF SCANNER

REALTIME DRONE DETECTION AND DIRECTION FINDING SYSTEM

RADOME



SPECIFICATION	
Detection Frequency Range	300MHz ~ 6GHz
Direction Finding Frequency Band	1km ~ 3km
Azimuth	350°
Detection Accuracy	5° ~ 15°
Real time Detection Bandwidth	120MHz
First Time UAV Detection Time	≤ 2Seconds
Minimum Frequency Detection	100Hz
Power Supply Requirement	100V / 240V
Power Consumption	≤ 250W
Ingress Protection	IP65
Operating Temperature	-25°C ~ +65°C

OURANOS™ CAMERA (LR-HYPT)

ELECTRO OPTICAL/INFRARED DUAL BAND CAMERA C-UAS SYSTEM,
HD DAY/NIGHT CAPABILITIES FOR TARGET RECOGNITION AND IDENTIFICATION

OVERVIEW

The LR-HYPT camera is a rotating surveillance equipment system that supports full-range, 360° continuous horizontal rotation and vertical high-angle rotation from -90° to +90°, equipped with optical equipment (EO/IR camera, LRF, etc.) mounted on a large-scale penetrative pan/tilt-based side bracket, providing omnidirectional monitoring and target detection/recognition/identification/tracking functions. By combining mechanical and electronic systems, the detection system mounted on the precise tracking optical equipment, such as the camera mounted on the side, can detect/produce target location information, including radar, RF scanner, panoramic camera, etc. It is a "real-time omnidirectional multi-target automatic precision surveillance system" that integrates the functions of capturing, identifying, and processing multiple targets 360°, including the airspace.

AI SYSTEM & PANORAMA CAMERA

- The AI system capable of distinguishing between drones and birds
- 360° automated precision monitoring of multiple drones

OURANOS™ CAMERA (LR-HYPT)

	CAMERA	HIGH PERFORMANCE CAMERA
LWIR · Detection · Recognition · Identification	Passive cooling, 8~14um, VOx, 12um pixels	Passive cooling, 8~14um, VOx, 12um pixels
	1,280x1,024, f30 ~ 300mm (8X, HFOV 23° ~ 2.9°)	1,280x1,024, f50 ~ 350mm (7X, HFOV 17° ~ 2.5°)
	Small drone 0.4x0.4m → D2.5/R1.5/I0.8km	Small drone 0.4x0.4m → D3/R2/I1km
	Medium-sized drone 2.0x2.0m → D8.0/R3.7/I1.4km	Medium-sized drone 2.0x2.0m → D7/R3.5/I1.5km
VIS CMOS (EO)	1/1.8" Sony Exmor Global Shutter CMOS, 2,048x1,536 (3.1MP), EIS (Image stabilization) f755 CZ (2x) + 2MP (1/2.8")	1/1.8" Sony Exmor Global Shutter CMOS, 2,048x1,536 (3.1MP), EIS (Image stabilization) f11 ~ 1,000mm 88X Optical zoom (HFOV 34° ~ 0.4°)
	Small drone 0.4x0.4m → D5.0/R2.5/I1km	Small drone 0.4x0.4m → D6.0/R3/I1.5km
	Medium-sized drone 2.0x2.0m → D9/R4/I1.5km	Medium-sized drone 2.0x2.0m → D11/R5/I2.5km
LRF	Eyesafe first grade, 1.5um wavelength, 32km measurement, 1/10/20Hz, divergence 0.25mrad, precision 1m	Eyesafe first grade, 1.5um wavelength, 32km measurement, 1/10/20Hz, divergence 0.25mrad, precision 1m

	PAN-TILT
Specifications	Size/Weight : 860x715x406mm (length subject to camera specifications), approximately 80-100kg
	Rotation range (tracking camera) : Pan (horizontal) continuous 360°, Tilt (vertical) -90° to +90°
	Rotation speed : Azimuth angle 0.001 ~ 60°/s, Tilt 0.001 ~ 40°/s
	Environmental certification operating temperature, corrosion resistance, weather resistance, dust and waterproof, EMC/EMI
Control	10/100 Mbps-based T Ethernet (TCP/IP-based Pelco-D or user-defined)
	Serial-based control (Pelco-D or user-defined)
	Digital video (10/100 Mbps-based T Ethernet), analog video (composite video)
	Display configuration/information : Camera control #1-3, map or radar, pan/tilt/lens control
	Camera control : Camera on/off, auto/manual focus, LRF on/off, target auto-tracking, video capture/storage, multi-camera view
	Map or video radar : Display of target movement tracking lines, display of target location
Functions (SW)	Pan-tilt/lens control/configuration : Selection of operating camera from multiple cameras, 8-directional arrows (manual rotation), return to reference azimuth/elevation, pan-tilt rotation speed setting, lens zoom in/out, display/extinction of camera information, display/extinction of visual lines, etc.

DRONE HUNTER XR & XRS

HAND-HELD ANTI DRONE JAMMER GUN

K-INNOVATIVE PRODUCT

- Trial use of the military superior product
- Registered as Innovation Product in the Republic of Korea Public Procurement Service

OVERVIEW

Drone Hunter XR is a rifle-type drone jamming gun with an intuitive design for quick on-site responses to drone threats. Drone Hunter XR is capable of neutralizing commercial drone frequencies including ISM band and GNSS L1 & L2 up to 1km. With its highly efficient, rugged and compact product design for lightweight, easy-to-use operation, Drone Hunter XR is certified with IP65 and ensures the best performance from various application areas such as checkpoints, borders, military/police operations where users are supposed to move and patrol.

FEATURE

- Mitigate a wide range of drones : ISM 433 & 900MHz, ISM 2.4 & 5.8GHz, GNSS L1 & L2
- Jamming range : 1km
- Selectable frequency bands : ISM Low (433MHz & 900MHz), ISM High (2.4GHz & 5.8GHz), GNSS (L1 & L2) or All band jamming can be selectable.
- User-friendly design : Quick battery reload, power ON/OFF & operation with buttons
- LED Indicator for various alarms including Battery status, system errors, operation mode
- Meet international IEEE/IEC62705-1 & SAR (Specific Absorption Rate) standard

DRONE HUNTER XR & XRS

HAND-HELD ANTI DRONE JAMMER GUN

SPECIFICATION (DRONE HUNTER XR)		
Frequency Band	433MHz ISM : 433.05 ~ 434.79MHz	915MHz ISM : 902 ~ 928MHz
	2.4GHz ISM : 2,400 ~ 2,483.5MHz	5.8GHz ISM : 5,725 ~ 5,850MHz
	GNSS L1 : 1,559 ~ 1,610MHz	GNSS L2 : 1,215 ~ 1,300MHz
Jamming Range	1km	
Battery Specification	Rechargeable Lithium-ion Battery (7.0Ah)	
Operation Time	1 hour (unlimited use with battery charger attached)	
Operating Temperature	-20°C ~ +50°C	
Ingress Protection	IP65	
Weight	Max 5.0kg (Battery pack included)	
Dimension	900 x 250 x 101 mm	

SPECIFICATION (DRONE HUNTER XRS)		
Frequency Band	400MHz ISM : 433.05 ~ 434.79MHz	900MHz ISM : 902 ~ 928MHz
	2.4GHz ISM : 2,400 ~ 2,483.5MHz	5.8GHz ISM : 5,725 ~ 5,850MHz
	GNSS L1 : 1,559 ~ 1,610MHz	GNSS L2 : 1,215 ~ 1,300MHz
Jamming Range	1km	
Battery Specification	Rechargeable Lithium-ion Battery (7.5Ah)	
Operation Time	1 hour (single battery pack)	
Operating Temperature	-20°C ~ +50°C	
Ingress Protection	IP65	
Weight	Max 5.5kg (Battery pack included)	
Dimension	786 x 247 x 101 mm	

All the data and appearance of the product are subject to change upon RF environments and customer's request.

DRONE HUNTER FD

C-UAS DIRECTIONAL RF JAMMER SYSTEM

OVERVIEW

Drone Hunter FD is a powerful countermeasure against drone threats. Designed to cover ISM bands and GNSS L1, L2, L5 it effectively neutralizes a single drone or multiple drones approaching in a direction from a distance of 5km and operating within its antenna beam width. It is equipped with high-power amplifiers and signal generators to enable powerful multi-band continuous jamming.

This field-proven solution operates with a positioner that receives data from a seamlessly integrated detection/identification system by OURANOS™ C2 or third-party systems. In addition, it can be used as a stationary/mobile solution.

FEATURE

- Frequency Ranges : ISM 433 & 900MHz, ISM 2.4 & 5.8GHz, GNSS L1, L2, L5
- Jamming Range : FD5 : 5km, FD8 : 8km
- Lightweight, efficient antennas
- Adjustable output power per band
- Optimum signal generators and amplifiers
- Stationary/mobile operation
- MIL-STD-810G
- IP67

DRONE HUNTER FD

C-UAS DIRECTIONAL RF JAMMER SYSTEM

ANTENNA

- A directional radiation pattern, which enables the concentration of radiation power in a specific direction
- Electrical performance improvement through optimization of multi-band radiation characteristics
- Possession of integrated component development technology and implementation of miniaturization
- Individual implementation of radiation components by frequency band (easy modification of electrical performance by frequency band, convenient response to customer requirements, excellent maintainability, and individual component interchangeability)

FREQUENCY BAND

3BAND	
2.4GHz ISM : 2,400 ~ 2,485MHz	(AZ : 40° / EL : 40°)
5.8GHz ISM : 5,725 ~ 5,875MHz	(AZ : 20° / EL : 20°)
GNSS L1 : 1,550 ~ 1,610MHz	(AZ : 80° / EL : 60°)
6BAND	
433MHz ISM : 420 ~ 470MHz	(AZ : 120° / EL : 80°)
915MHz ISM : 860 ~ 930MHz	(AZ : 70° / EL : 70°)
2.4GHz ISM : 2,400 ~ 2,485MHz	(AZ : 40° / EL : 40°)
5.8GHz ISM : 5,725 ~ 5,875MHz	(AZ : 20° / EL : 20°)
GNSS L1 : 1,550 ~ 1,610MHz	(AZ : 80° / EL : 60°)
GNSS L2, L5 : 1,164 ~ 1,300MHz	(AZ : 80° / EL : 60°)

SPECIFICATION

Jamming Range	FD5 : 5km, FD8 : 8km
Jamming Signal Source	Linear FM with Noise Modulation
Cooling Method	Forced Air Cooling
Operating Temperature	-32°C ~ +50°C
Storage Temperature	-33°C ~ +65°C
Power Supply	28 VDC (A power supply unit will be supplied.)
Ingress Protection	IP67
Dimensions	614 x 480.1 x 350.5 mm
Weight	FD5 : 27.0kg, FD8 : 32.0kg

All the data and appearance of the product are subject to change by RF environments and according to customer requirements.

DRONE HUNTER FP6

C-UAS DIRECTIONAL RF JAMMER SYSTEM

OVERVIEW

Drone Hunter FP6 is a powerful countermeasure against drone threats. Designed to cover ISM bands and GNSS L1 & L2, it effectively neutralizes a single drone or multiple drones approaching in a direction from a distance of 500m to 1km and operating within its antenna beam width.

Its antenna beam width can be expanded to 360° if a total of 4 antennas are installed. It is equipped with high-power amplifiers, signal generators and panel antennas to enable powerful multi-band continuous jamming. This field-proven solution operates with a positioner that receives data from a seamlessly integrated detection/identification system by OURANOS™ C2 or third-party systems. In addition, it can be used as a stationary/mobile solution.

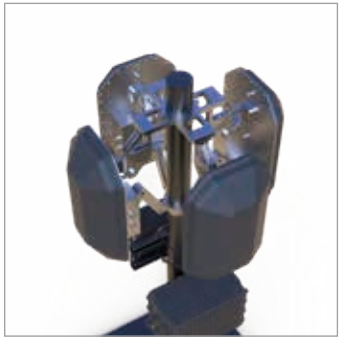
FEATURE

- Frequency Ranges : ISM 2.4 & 5.8GHz, GNSS L1 & L2, *ISM 433 & 915MHz (Optional)
- Antenna Beam Width: Azimuth : 90°, Elevation: 45°
- The azimuth can be expanded to 360° by installing 4 antennas
- Adjustable output power per band
- Lightweight, efficient antennas
- Optimum signal generators and amplifiers
- Stationary/mobile operation

DRONE HUNTER FP6

C-UAS DIRECTIONAL RF JAMMER SYSTEM

Neutralizes multiple drones approaching from a certain direction



SPECIFICATION	
Frequency Band	2.4GHz ISM : 2,400 ~ 2,500MHz *Optional 5.8GHz ISM : 5,725 ~ 5,850MHz 433MHz ISM : 420 ~ 450MHz GNSS L1 : 1,550 ~ 1,610MHz 915MHz ISM : 920 ~ 928MHz GNSS L2 : 1,208 ~ 1,254MHz
Jamming Range	500m ~ 1km (5:1 Ratio)
Antenna Beam Width	Azimuth : 90°, Elevation : 45°(1Panel)
Jamming Signal Source	Linear FM with Noise Modulation
Cooling Method	Forced Air Cooling
Antenna Type	Multi-port directional panel antenna
Operating Temperature	-20°C ~ +60°C
Output Power	185W
Power Supply	28 VDC (A power supply unit will be supplied.)
Ingress Protection	IP65
Dimensions	Main Equipment : 237 x 480 x 310.5 mm / Antenna : 366 x 606 x 205.2 mm
Weight	Main Equipment : 30kg / Antenna : 10kg

All the data and appearance of the product are subject to change by RF environments and according to customer requirements.

ANTENNA

- Directional radiation in a certain direction to focus on certain target drones
- Optimized multi-band radiation to improve jamming effectiveness

DRONE HUNTER FO

C-UAS OMNI-DIRECTIONAL RF JAMMER SYSTEM

OVERVIEW

Drone Hunter FO is a powerful countermeasure against drone threats. Designed to cover ISM bands and GNSS L1 & L2, it effectively neutralizes a single drone or multiple drones approaching in all directions from a distance of 2km and operating within its antenna beam width. It is equipped with high-power amplifiers and signal generators to enable powerful multi-band continuous jamming.

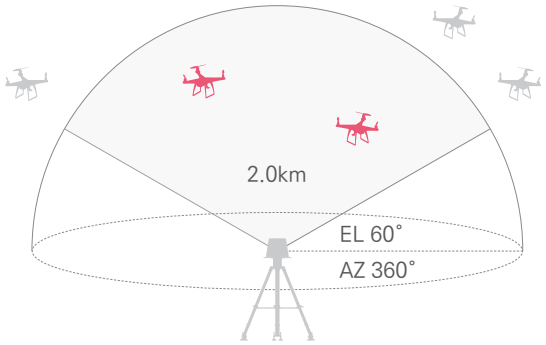
This field-proven solution operates with a positioner that receives data from a seamlessly integrated detection/identification system by OURANOS™ C2 or third-party systems. In addition, it can be used as a stationary/mobile solution.

FEATURE

- Frequency Ranges : ISM 2.4 & 5.8GHz, GNSS L1 & L2, *ISM 433 & 900MHz (Optional)
- Jamming Range : 2km
- Lightweight, efficient antennas
- Adjustable output power per band
- Optimum signal generators and amplifiers
- Stationary/mobile operation
- MIL-STD-810G
- IP65

DRONE HUNTER FO

C-UAS OMNI-DIRECTIONAL RF JAMMER SYSTEM



Neutralize multiple drones approaching
from various directions

SPECIFICATION		
Frequency Band	2.4GHz ISM : 2,400 ~ 2,485MHz 5.8GHz ISM : 5,725 ~ 5,875MHz GNSS L1 : 1,550 ~ 1,610MHz GNSS L2 : 1,215 ~ 1,300MHz	*Optional 433MHz ISM : 420 ~ 470MHz 900MHz ISM : 860 ~ 930MHz
Jamming Range	2km	
Antenna Beam Width	Azimuth : 360°, Elevation : 60°	
Jamming Signal Source	Linear FM with Noise Modulation	
Cooling Method	Forced Air Cooling	
Amplifier Operating Mode	Closed-Loop	
Operating Temperature	-32°C ~ +50°C	
Storage Temperature	-33°C ~ +65°C	
Power Supply	28 VDC (A power supply unit will be supplied.)	
Ingress Protection	IP65	
Dimensions	540 x 400 x 300 mm	
Weight	35.0kg	

All the data and appearance of the product are subject to change by RF environments and according to customer requirements.

ANTENNA

- Omnidirectional radiation pattern that allows for radiation power to be emitted in all directions
- Enhancement of electrical performance through optimization of multi-band radiation characteristics

DRONE HUNTER M

C-UAS OMNI-DIRECTIONAL RF JAMMER SYSTEM

OVERVIEW

Drone Hunter M is a drone equipped with a jammer module to mitigate drone threats. Designed to cover ISM bands, it neutralizes a single or multiple drones within a radius of 50m in an agile manner by flying to target drones and radiating jamming signals with omni-directional antennas. An EO/IR camera is installed in it to identify target drones before neutralizing them.

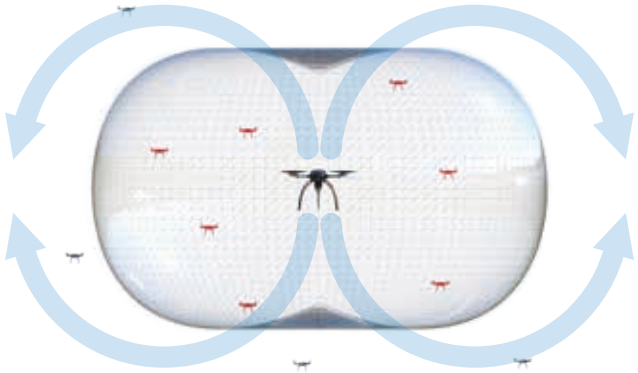
FEATURE

- Frequency Ranges : ISM 2.4 & 5.8GHz
- Jamming Range : 100m radius
- Omni-directional antenna
- Optimum signal generators and amplifiers
- Equipped with an EO/IR camera

DRONE HUNTER M

C-UAS OMNI-DIRECTIONAL RF JAMMER SYSTEM

ANTENNA RADIATION PATTERNS



SPECIFICATION

Frequency Band	2.4GHz ISM : 2,400 ~ 2,485MHz 5.8GHz ISM : 5,725 ~ 5,875MHz
Jamming Range	100m
Antenna Beam	Azimuth : 360°, Elevation : 60°
Flight Distance	5km
Operating Time	30min
Flight Speed	36km/h
Drone Type	Multicopter
Identification	EO/IR camera
Weight	7.0kg
Dimensions	950 x 400(H) mm

All the data and appearance of the product are subject to change by RF environments and according to customer requirements.

OURANOS™ VEHICLE

VEHICLE ANTI-DRONE TOTAL SOLUTION

CONFIGURATION

C2

- OURANOS™ 3D RADAR
- OURANOS™ RFDF SCANNER
- OURANOS™ CAMERA
- DRONE HUNTER FD

OVERVIEW

OURANOS™ VEHICLE is a mobile counter-drone solution to protect critical infrastructure, border areas, and public places against drone threats. Consisting of detection, identification, and mounted neutralization systems, it is designed to swiftly respond to drone threats by patrolling areas where hostile drones may conduct a reconnaissance or strike mission.

FEATURE

- Swift response to various drone threats with its mobility
- Detection, identification and neutralization of hostile drones
- Automatic operation from detection and identification to neutralization
- Monitoring and operating of each system with its C2 system
- Ingress Protection : IP65
- Customizable according to customer requirements

C2 SYSTEM SOFTWARE

COMMAND & CONTROL C2 FOR OURANOS™ C-UAS SYSTEM

OVERVIEW

OURANOS™ C2 is a command and control system integrating detection, identification and neutralization systems. Users can easily configure an entire system, check each system and monitor drone threats in real time with automatic alarms.

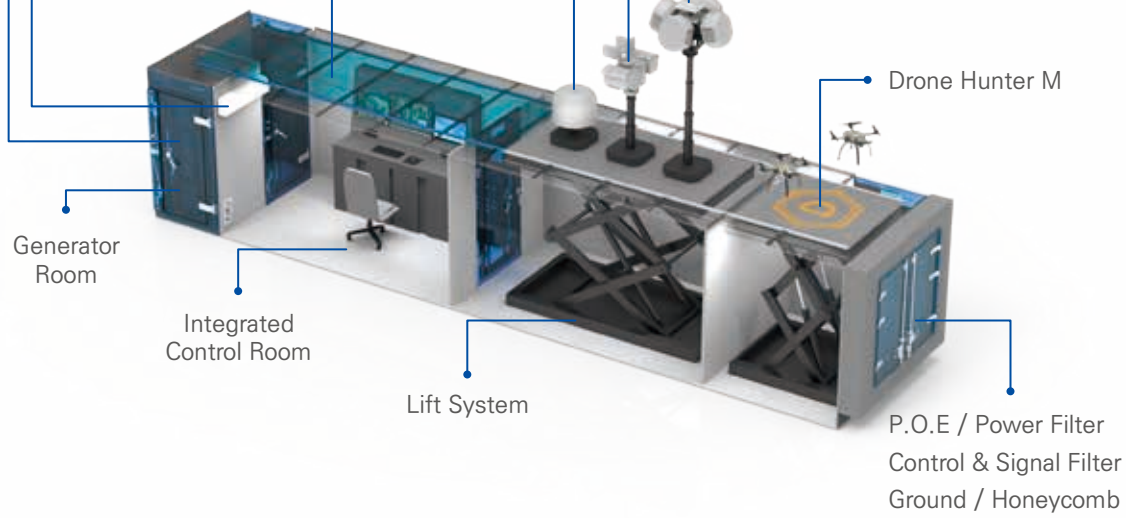
All data received by detection and identification systems are recorded in the software and displayed on the screen, and users can operate neutralization systems with its user-friendly GUIs. As an open architecture, this C2 system can integrate third-party systems by applying their APIs to it

FEATURE

- Configuration of an entire system consisting of detection, identification and neutralization systems
- Monitoring of all detection, identification and neutralization systems in real time
- Automatic jamming of detected/identified drones by transmitting drone data to neutralization systems
- Display of detected and identified drones on the screen
- Records of the models, locations and flight timelines of detected drones
- Automatic alarms when detecting hostile drones
- User-friendly GUIs
- Automatic/manual operation
- Integration of third-party systems

ANTI-DRONE + EMP PROTECTION SHELTER

ELECTRONIC WARFARE DEFENSE AND PROTECTION SOLUTION THAT IS EFFECTIVE IN PROTECTING CRITICAL FACILITIES FROM EMP AND DRONE THREATS



FEATURE

- Construction of protective equipment that is safe from nuclear and non-nuclear EMP threats
- Detection, identification, and neutralization equipment that enables preemptive response to various drone threats
- Capability of carrying on-board reconnaissance and attack equipment, including armed drones
- Fixed Type/Vehicle Type

OVERVIEW

The Anti-Drone + EMP Protection Integrated System is a next-generation anti-drone solution that incorporates detection, identification, and neutralization equipment and control systems to reliably protect and maintain drone defense systems against nuclear and non-nuclear EMP attacks and related situations with electronic countermeasures.

RCIED JAMMER

SPECIALLY CUSTOMIZED RCIED JAMMER

OVERVIEW

Dymstec's RCIED Jammer is professionally designed to block emitted radio signals used for remote activation of explosive devices controlled by specific radio frequencies and protect VIPs, Military/ Security staff/EOD teams from RCIEDs used by terrorists. The main objective of this product is to design and construct an advanced radio frequency Jammer device used to disrupt or prevent unauthorized communication for security application. Dymstec RCIED Jammer product adopts the cutting-edge jamming technique in one compact briefcase. The system contains Jammer modules, antennas, battery, power supply and optional remote control. Jamming modules can be selected to provide high power targeted jamming or wide band with modules available in bands from 20 ~ 6,000 MHz. The product is supplied with both directional antennas and omni antennas to maximize the jamming area in different scenarios.

FEATURE

- Blocking of wireless communication channels including cell phones, WiFi, Bluetooth, etc.
- Battery Run Time : 60min each for an internal battery and an external battery
- Individual On/Off switches for each band
- AC/DC converter embedded in the external battery
- Remote control (optional)
- A total of 6 external antennas

RCIED JAMMER

SPECIALLY CUSTOMIZED RCIED JAMMER

MODEL

A Type Model | B Type Model | C Type Model

SPECIFICATION

Frequency Band	25MHz ~ 5,850MHz
Jamming Range	30m
Output Power	140W
Power Supply	230V / AC, 12V / DC
Battery Type	Lithium polymer battery (1Internal battery and 1external battery)
Cooling Method	Forced convection
Weight	45kg (excluding the external battery)
Operating Temperature	-10˚C ~ +50˚C
Operating Humidity	5% ~ 95%

FEATURE

- Built-in battery, auxiliary battery
- AC power compatibility
- Optional use of directional antenna for improved jamming performance in Cellular Band

COMMUNICATION JAMMER

DESIGNED FOR FLEXIBLE & VERSATILE USE

OVERVIEW

Communication jammer is a tactical jammer device which is designed to disrupt, neutralize all types of radio communication equipment including cellular, Wi-fi, Bluetooth frequency bands.

FEATURE

- Blocking of cellular frequency bands
- Individual On/Off switches for each band
- Adjustable output power levels (high or low)
- Power Supply : AC input
- Remote control (optional)
- Internal patch antennas

APPLICATION AREA

Special Police (S.W.A.T)

VIP Protection

Bomb Disposal Teams

Military Security Forces

COMMUNICATION JAMMER

DESIGNED FOR FLEXIBLE & VERSATILE USE

MODEL

SPECIFICATION

Output Power	230W
Jamming Range	50m
Internal Modulation	PLL VCO & digital synthesizer
Operation Method	Individual On/Off switches for each band
Antenna Type	Internal patch antennas
Battery Type	Lithium polymer battery 220 VAC, 28 VDC
Weight	38kg (excluding the external battery)
Operating Temperature	−10˚C ~ +65˚C
Operating Humidity	5% ~ 95%

FEATURE

- Blocking of cellular frequency bands
- Internal patch antennas
- On/Off switches for each band, adjustable output for each band

VEHICLE-MOUNTED JAMMER

DESIGNED FOR MOBILE USE TO PROTECT AGAINST TERRORISM

OVERVIEW

Dymstec's vehicle-mounted jammer is specially designed to be used in vehicle-based units. Users can apply the system in wide range of vehicles from armored military vehicle to SUV, limousine for VIP Protection, Vehicle Convoy missions.

Dymstec's vehicle-mounted jammer offers a user maximum jamming effectiveness with its DDS based signal source and can block in different frequencies simultaneously or separately. Jamming signal sources are customer-configurable to suit the local signal environment and allow the system to be programmed to neutralize signal including VHF/UHF and public communications systems (such as 2G, 3G, 4G, LTE, 5G and WiFi).

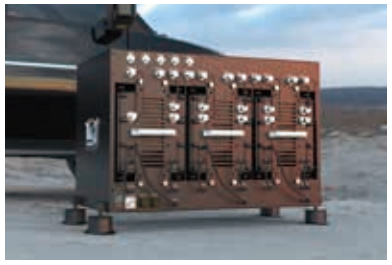
FEATURE

- Individual On/Off switches for each band
- Adjustable output power
- Automatic Level Control (ALC)
- Alarms : Overheating and output power overload (automatic shutdown of the jammer)
- Real-time remote monitoring of jammer Operation

VEHICLE-MOUNTED JAMMER

DESIGNED FOR MOBILE USE TO PROTECT AGAINST TERRORISM

MODEL



SPECIFICATION

Frequency Band	2G, 3G, 4G, LTE, 5G, VHF, UHF, WiFi
Jamming Range	100m
Output Power	550W
Antenna Type	Omni-directional antennas
Cooling Method	Forced convection
Weight	Main : 75kg (A total of 3units) / Jammer Mounting Tray : 50kg
Operating Temperature	-20˚C ~ +50˚C
Operating Humidity	5% ~ 95%

FEATURE

- Individual On/Off switches for each band
- Robust design
- Compact antenna configuration achieved through built-in the combiner module

MANPACK RCIED JAMMER

SPECIALLY CUSTOMIZED TO RF JAMMING SYSTEM

OVERVIEW

This manpack RCIED jammer can block remote trigger signals activating bombs by radiating a wide range of jamming signals. Its jamming performance and mobility are enhanced by reducing the size and weight of the existing jammer to satisfy customer requirements.

It is comprised of a total of 2 main devices which have different frequency ranges, and each device is powered by a detachable battery to main its stable operation.

FEATURE

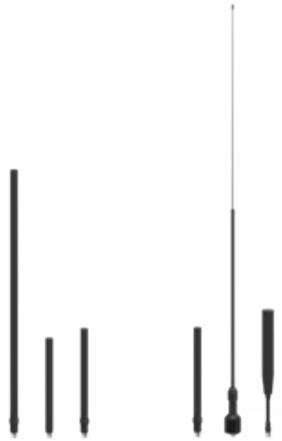
- Jamming Range : 30m radius
- Light weight and small size so easy to carry
- A total of 2 main devices having different frequency ranges
- Detachable batteries
- Individual jamming switches for each band
- LEDs indicating the operation status of each band

MANPACK RCIED JAMMER

DESIGNED FOR FLEXIBLE & VERSATILE USE

MODEL

A/B TYPE ANTENNA



DETACHABLE BATTERIES

SPECIFICATION

Frequency Band	20 ~ 6,000MHz
Output Power	10W for each band
Main Devices	1 set (A type and B type)
Operating Time	1 hour
Operating Channel	6 bands for each device
Power Supply	AC 220V, DC 24V ~ 42V
Battery Type	Lithium-ion batteries
Antenna Type	Detachable, omni-directional, N type
Operating Temperature	-20°C ~ +50°C
Operation Method	Individual switches for each band
Weight	25kg (including the main device, batteries and antennas)
Dimensions	450 x 340 x 165 mm (excluding the antennas)
Ingress Protection	IP65

INTELLECTUAL PROPERTY RIGHTS / DESIGN PATENT APPLICATION / CERTIFICATES

INTELLECTUAL PROPERTY RIGHTS AND AWARDS

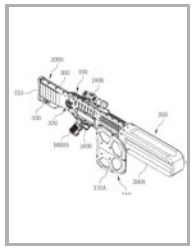
CERTIFICATES

INTELLECTUAL PROPERTY RIGHTS AND AWARDS

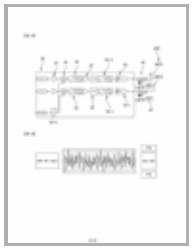
Intellectual Property Rights
Design Patent Application
Certificates

2022 Record		
Patent	20	4
Design	5	2
Trademark	2	4
Total	27	10

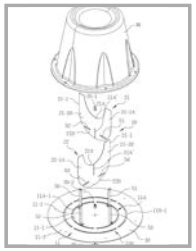
INTELLECTUAL PROPERTY RIGHTS



Rifle-shaped counter-drone jammer with a detachable battery



Counter-drone jamming system using white noise

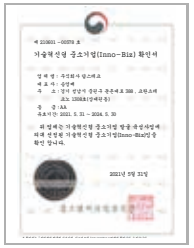


Counter-drone omni-directional broadband monopole antenna

AWARDS AND CERTIFICATES

Minister of Science and ICT's Emergency Network Contribution Award

Certificate of Management Innovation Small Business (Main-Biz)



Certificate of Technology Innovation Small Business (Inno-Biz)

Certificate of Innovative Product designated by the Public Procurement Service

EMP PROTECTION
EMC TEST & MEASUREMENT SOLUTIONS

EMP/EMC

① EMP PROTECTION SOLUTION
② EMP SHIELDED RACK
③ VEHICLE EMP SHIELDED SHELTER
④ PRODUCTION FACILITIES
⑤ EMC CHAMBER
⑥ LICENSES · CERTIFICATIONS · PATENTS

www.dymstec.com / www.dynamicshielding.com

MAINBiz 경영혁신형 중소기업
INNOBIZ 기술혁신형중소기업

EMP PROTECTION FACILITY TURNKEY CONSTRUCTION SOLUTION

OVERVIEW

Provision of a perfect turnkey EMP protection solution including technical advice for all areas of EMP protection facility construction, design optimized for protection purpose and use, production of major components, professional construction technology to guarantee performance, SE test facility and professional evaluation team, strict quality assurance and delivery schedule, systematic and efficient follow-up management, etc

Protection Planning
Establishment of EMP protection concepts and plans

Design
Optimized design

Manufacturing
ISO 9001 : 2015
Quality management system

Installation
Precision construction with electromagnetic shielding skills

SE Performance Evaluation
SE test technical support

High Quality Maintenance Service
Continuous technical support and follow-up management

EMP BUSINESS PERFORMANCE

SPECIALIZED IN EMP CONSTRUCTION

- Skilled professionals with the bet expertise and experiences in each field, such as design,manufacturing, construction, and test measurement.
- Establishment of a systematic plan to complete the foundation for successful business execution

FROM CONCEPT AND DESIGN TO THE END

- Complete EMP Shielding components production infrastructure (production/SE test equipment)
- ISO 9001 : 2015 quality management
- Prompt response and support to customer requests

ENGINEERING EXPERTISE IN EMP PRODUCTION FACILITY CONSTRUCTION

- Possession of construction technology optimized for site environments and protection purpose
- 100% satisfaction to customers' requirements
- Acquired licenses in the fields of information & communication engineering/electric equipment construction/facilities & mechanical works

SE TEST PROFESSIONAL TECHNICAL MANPOWER AND MEASURING EQUIPMENT

- SE performance evaluation team and inspection facilities for shielding effectiveness testing
- Support for SE shielding effect evaluation for long-term operation

ELECTROMAGNETIC WAVE SHIELDING STRUCTURE

SHIELDING METHOD

① Welding Type (Permanent)
- Maintain high-performance shielding conditions for a long period
- MAG (CO^2 Gas) welding construction

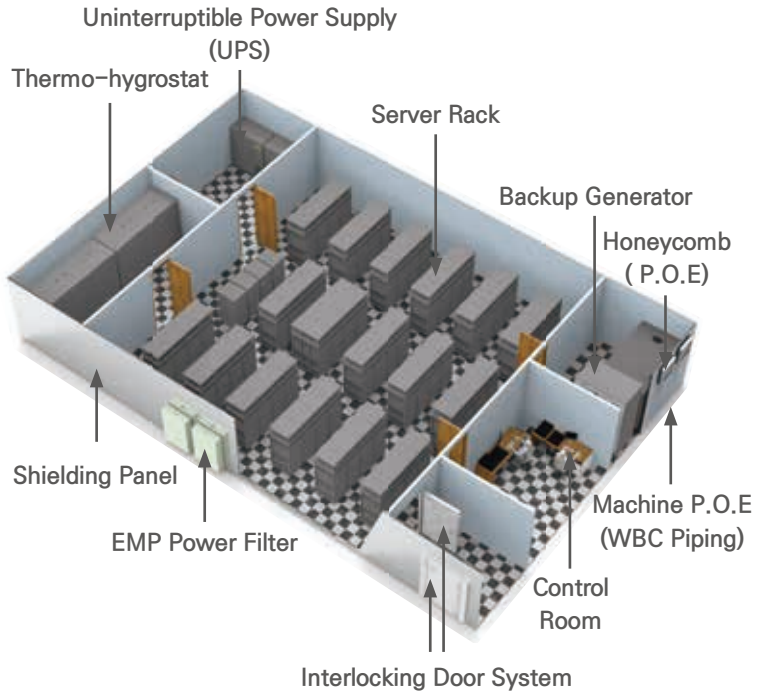
② Modular Pan-type (Semi-permanent)
- The most used shielding room type
- Use a steel plate produced after cutting/bending/processing a single steel plate
- Possible custom design as per customer specifications
- Use shielding gaskets, bolts, and nuts (“U” bending) for installation

③ Modular Type (Commercial, laboratory, research lab, MRI room, etc.)
- Modular panel type of structure using galvanized steel panel and clamp-up skill
- Ideal for small shielded rooms, easy to assemble, and cost-effective

INTERLOCKING DOOR SYSTEM

- Designed as an interlocking system
- Shielding performance at 18GHz @ 100dB or more

CONCEPT DESIGN FOR EMP SHIELDED FACILITY



EMP FILTER

- Power and signal control filters
- Protection of defense facilities and critical equipment from threats of high-altitude nuclear explosion (HEMP) and non-nuclear (NNEMP) attacks

HONEYCOMB

- Honeycomb vents are shaped hexagonal, used for shielded room ventilation panel for EMI shiedling

ELECTROMAGNETIC WAVE SHIELDING DESIGN & CONSTRUCTION

SE TEST professional technical experts and measuring equipment

Preparation of design and construction

▼

Architectural structure

▼

EMP shielding

▼

Equipment installation

▼

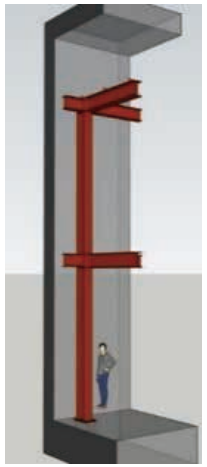
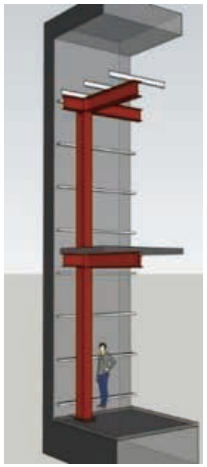
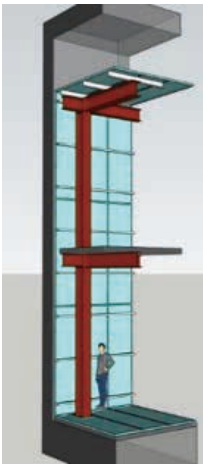
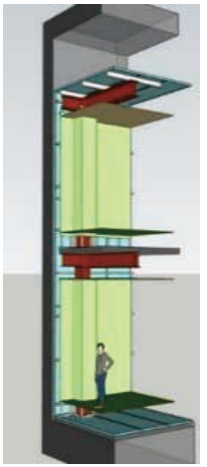
Interior/exterior construction

▼

Acceptance Test

FEATURE

- EMP Protection facility installation and design-construction interface
- Design review before construction to avoid recurrence of construction / installation / maintenance
- Creation of production drawings and construction details through on-site measurement
- Proper training on EMP protection principles and installation of protection equipment for the construction contractors
- Design planning considering construction errors and tolerances
- Proper self-inspection between manufacturing of EMP protection components and construction
- Construction planning for maintenance
- Provision of a system operation manual

MANUAL SWING DOOR

FEATURE

- Patent application and registration (Registration No. 10-2020-0058573) : Swing door opening and closing device for electromagnetic shielding enclosure
- Certification of comprehensive performance testing for door reliability (November 2017)
- Certified reliability and lifespan testing of doors (December 2017)
- Manual slope application available (Option)

SPECIFICATION

Dimensions	0.9(W) x 2.0(H) m / 1.2(W) x 2.2(H) m
Weight	Approx. 170kg / Approx. 240kg
Door Thickness	65mm
Shielding Performance	Complying with IEEE-299 specification (~18GHz : 100dB or more / Complying with MIL-STD-188-125 specification)
Handle Operating Force	Under 100N
Material	Galvanized Steel

SEMI-AUTO SWING DOOR

FEATURE

- Patent application registered (registration number : 10-2021-0010599) : Semi-automatic swing-type door opening/closing device for electromagnetic shielding enclosure
- Installation of internal/external manual levers that can be used to open and close the door in case of emergency
- Interlocking System : The pneumatic system is applied, making it advantageous for shielding
- Option for applying manual/automatic slope
- Interlocking control with indicator lights/slope doors

SPECIFICATION

Dimensions	0.9(W) x 2.0(H) m / 1.2(W) x 2.2(H) m
Weight	Approx. 200kg / Approx. 270kg
Door Thickness	65mm
Shielding Performance	Complying with IEEE-299 specification (~18GHz : 100dB or more / Complying with MIL-STD-188-125 specification)
Power	Pneumatic
Air Pressure	5 ~ 6 kgf/cm^2

MANUAL SLIDING DOOR

FEATURE

- Patent Application Registration (Registration No. : 10-2021-0105090) : Semi-automatic swing-type door opening/closing device for electromagnetic shielding enclosure
- Door clamping and movement: manual control
- Superior durability compared to swing doors, advantageous for large doors
- A stable structure that clamps the three corners of the door
- Manual slope application available (optional)

SPECIFICATION

Dimensions	2.0(W) x 2.0(H) m
Weight	Approx. 670kg
Door Thickness	145mm
Shielding Performance	Complying with IEEE-299 specification (~18GHz : 100dB or more / Complying with MIL-STD-188-125 specification)
Door Movement Load	Under 150N
Handle Operating Force	Under 150N

SEMI-AUTO SLIDING DOOR

FEATURE

- Patent application registration (registration number : 10-2021-0105090) : sliding door opening and closing device for electromagnetic wave shielding enclosure
- Door Clamping : Pneumatic system
- Door Movement : Manual control
- Manual or automatic slope application (optional)
- Integration with indicator lights and slope doors for coordinated control

SPECIFICATION

Dimensions	1.6(W) x 2.2(H) m / 3.0(W) x 3.0(H) m
Weight	Approx. 980kg / Approx. 1,400kg
Door Thickness	120mm / 155mm
Shielding Performance	Complying with IEEE-299 specification (~18GHz : 100dB or more / Complying with MIL-STD-188-125 specification)
Door Movement Load	Under 150N
Air Pressure	5-6 kgf/cm^2

FULL-AUTO SLIDING DOOR

FEATURE

- Patent application registration (registration number : 10-2021-0105090) : sliding door opening and closing device for electromagnetic wave shielding enclosure
- Door Clamping : Pneumatic system
- Door Movement : Electronic control
- Automatic slope/lift application (optional)
- Integration with indicator lights and slope doors for coordinated control

SPECIFICATION

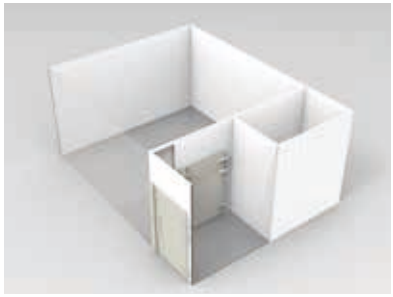
Dimensions	3.0(W) x 3.0(H) m / 5.0(W) x 4.5(H) m
Weight	Approx. 1,800kg / Approx. 4,200kg
Door Thickness	160mm
Shielding Performance	Complying with IEEE-299 specification (~18GHz : 100dB or more / Complying with MIL-STD-188-125 specification)
Power Supply	3-phase AC 380V (changeable if required)
Air Pressure	5-6 kgf/cm^2

INTERLOCKING SYSTEM

OVERVIEW

Inside the EMP protection space, double shielding doors are installed to maintain shielding that exceeds domestic and foreign requirements, and they are opened and closed in an interlocking method.

In general, it is installed as removable and to prove test and evaluation results according to the regulations.



ELECTROMAGNETIC SHIELDING DOOR RELIABILITY TEST FACILITY

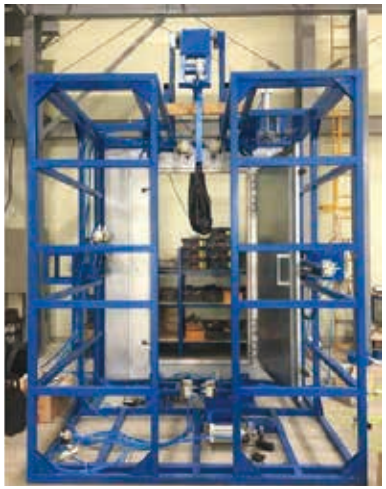
TEST REPORT

시 험 결 과

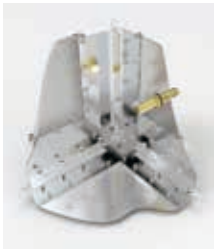
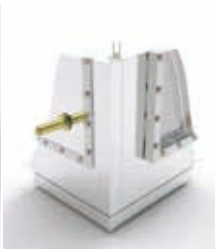
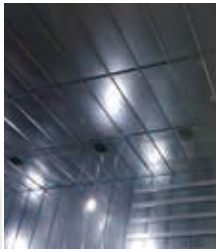
KTR 한국화학융합시험연구원장

ELECTROMAGNETIC SHIELDING DOOR RELIABILITY TEST

Establishment of electromagnetic shielding rooms and door reliability test facilities to produce high-quality shielding doors and provide the convenient operation of shielding facilities Based on the electromagnetic shielding door reliability test standard of RS-KIMM-2013-0195 in Korea, the various electromagnetic shielding doors were tested for gap variation, shielding performance, opening and closing, static load tolerance, deflection, lifespan, durability, etc.



SHIELDING PANEL / WAVEGUIDE / EMP FILTER / HONEYCOMB


SHIELDING PANEL

- Manufacturing facilities for shielding components such as shielding panels and doors
- Strict manufacturing process (ISO 9001 : 2015)
- Minimization of quality defects by skilled production technicians
- Prompt response and support to end-user inquiries

WAVEGUIDE

- Design/installation to enable a shielding level of 100dB at 10kHz ~ 18GHz
- Installation of all lines penetrating the shielding panel with entry panels welded 360°
- Fastening of waveguides with a nut by inserting shielding gaskets
- Shielding effect testing and leakage part debugging after installation

EMP FILTER

- Prompt response system through additional development
- High-quality and cost-effective compared to competitors
- Possession of CE, NEP for some models
- In-house production of all products
- Prompt after-supply services
- Winning a number of projects

HONEYCOMB

- Maintenance of the appropriate temperature inside the shielded room
- Detailed shielding design at the part in contact with inside/outside ducts
- Design and installation enabling a shielding level of more than 100dB

Item	Open Size (mm)	Weight (kg)
EMC & EMP	0.7 x 1.8	65
EMP	1.0 x 2.0	100
EMP	1.2 x 2.1	130
EMP	1.2 x 2.7	170

EMP SHIELDED RACK & ENCLOSURE

COST EFFECTIVE EMP PROTECTION SOLUTION

EMP (Electromagnetic Pulse) shielding rack is a product that can be operated in EMP protectionfacilities or general facilities to protect electronic equipment, as well as in spaces where EMP protection is not provided. To replace the existing standard rack, heat flow control and shielding technologies are applied to cool the heat of the internal equipment while guaranteeing the shielding effect. Compared to the construction of EMP protection facilities targeting critical infrastructure, installation and maintenance are simpler (budget reduction/shortened installation time), and electronic equipment can be safely protected from nuclear and non-nuclear EMP, such as major data servers, communication/network facilities, etc.

EMP SHIELDED RACK THERMAL ANALYSIS

Thermal analysis design using flow simulation (solid works), cooling system through forced supply/exhaust

DESIGN AND MANUFACTURING KNOW-HOW OPTIMIZED FOR PROTECTION

EMP shielded rack optimized for protection of national defense electric facilities, telecommunications, etc.

RELIABILITY TEST REPORT

Gap variation, shielding performance, opening and closing, static load tolerance, deflection, lifespan, durability, etc.

THE LARGEST NUMBER OF DELIVERIES AND INSTALLATIONS IN KOREA

Delivered to a number of public and national critical facilities considering various site environments

EMP SHIELDED RACK & ENCLOSURE

* Technical specifications are subject to change according to customer requirements

SPECIFICATION	
Type	19-inch standard (internal 40u)
Size	Communication (43u) : 670(W) x 750(D) x 2,200(H) mm Server (42u) : 670(W) x 1,350(D) x 2,200(H) mm
Weight	200kg ~ 350kg or less
Performance Conditions	Meet International Standard IEC61000-2-11, MIL-STD-188-125
Shielding Effect (1st Class Protection)	20 logf ~ 60dB or more (10kHz ~ 10MHz), f : Frequency Band (Hz) 80dB or more (Frequency Band : 10MHz ~ 18GHz)
Door Configuration	Front Door (for Vault) : Usage for storing important goods, traps, and environmental constraints
EMP Power Filter	Front & Rear Door (for Comm.) : Usage for internal inspection and maintenance 250V, 50 ~ 60Hz for EMP Insertion loss : 10kHz ~ 18GHz (60 ~ 100dB) Option : 100dB (f : 10kHz ~ 18GHz) Voltage Drop Test : Within 10% of the rated
Honeycomb	Shielding effect : 80 ~ 100dB (frequency : 10kHz ~ 18GHz)
Cooling Method	Maintain internal temperature through air circulation through cooling fan

EMP TYPE

- Fixed/Portable
- Vessel-mounted
- Communication servers
- Controllable automatically
- Satellite communications
- Storage of important equipment
- Container type

EMP SHIELDING RACK & ENCLOSURE

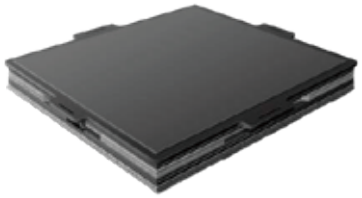
THERMO-HYGROSTAT SYSTEM

Constant temperature and humidity system applied to various types of EMP shielding racks

- Maintain suitable temperature condition for server and computerized equipment operation inside the rack

Lower Power, High-Efficient

- Designed to remove only necessary heat from the equipment inside the rack, consequently providing high-efficiency with low power.



ANTI-SEISMIC DEVICE

Seismic Isolation Support

- Easy Installation (No floor work required)
- Can be installed indoors or outdoors
- Verified performance from an official Japanese certified authority (MIT)
- 1 set per rack (4 sheets) / 300mm x 300mm per slider
- Loads up to 11.16 ton per set

UPS

Uninterruptible Power Supply suitable for the required specifications according to the power consumption capacity

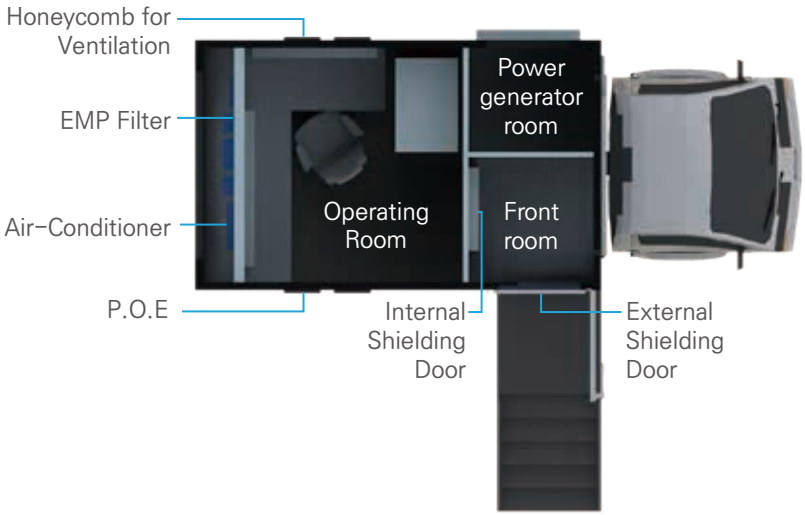
- Provides control, status, alarm functions

ENVIRONMENT MONITORING SYSTEM

Central monitoring and control system providing real-time monitoring of the temperature inside the rack, door open/close status, voltage and cooling fan conditions

MOBILE EMP PROTECTION SHELTER

- Mobile Base Station applied when an operational satellite base station is restricted from operating in an emergency such as war
- Facility that enables satellite communication and operation without interruption even in an EMP Situation
- Protects Essential data servers, communications, and network equipment from EMP Attack



Vehicle	Appearance	14 ton long shaft, 12-speed automatic transmission 11,790(L) x 2,490(W) x 3,950(H) mm
	Maximum Loading Capacity	14,000kg
Shielding effectiveness	Applicable Standards	MIL-STD-188-125 [10kHz ~ 1GHz (100dB)] IEEE-STD-299 [1GHz ~ 18GHz (100dB)]
	EMP Shielding Doors	Interlocking Door System

Equipment	Generator	30KW level diesel generator
	UPS and Storage Battery	20KVA level UPS and AGM80-12 level parallel construction batteries
	Air Conditioner	66sqm size customized chiller

MANUFACTURING EQUIPMENT & SE TEST EQUIPMENT / SELF-INSPECTION

● Full production infrastructure to manufacture high quality, robust EMP Shielding components Equipment for shielding performance inspections that meets the International IEC and MIL-STD-188-125 standards Measurement facilities and specialized SE assessment teams for spectrum analyzer, signal generators, high power amplifiers, horn antennas, lp antennas, roof antenna, and biconical antennas

MANUFACTURING EQUIPMENT

Iron-plate Cutting Machine
AMADA
(PEGA357)

Laser Cutting Machine
TRUMP
(TCL3030)

Iron-plate Bending Machine
AMADA
(FBD1253)

Iron-plate Bending Machine
AMADA
(FBD1253)

Milling Machine
Ildong Industry
(MTH-3000)

Argon Welding Machine (Air-cooled)
Maengho Industry
(TIG-360)

Argon Welding Machine (Water-cooling type)
Joyoung Welding
(DB-350AN)

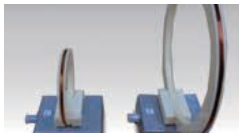
Lathe Machine
Hwacheon Machinery
(WL-460)

SE TEST EQUIPMENT & SELF-INSPECTION

Spectrum Analyzer
Keysight
(N9010A)

Signal Generator
Keysight
(N5173B)

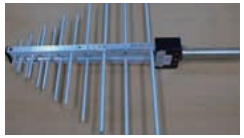
High-power Amplifier (6 ~ 18GHz)
Exodus
(AMP2053)



Loop Antenna (10kHz ~ 30MHz)
OTCS
(OTCL9k30M)

Horn Antenna (1 ~ 18GHz)
Schwarzbeck
(BBHA9120)

Conical Antenna (1 ~ 18GHz)
OTCS
(OTCC 1G18G)



LP Antenna (250MHz ~ 2.4GHz)
Schwarzbeck
(UHALP9108A)

Small Bi-conical Antenna (30MHz ~ 1GHz)
OTCS
(OTCB 30M1G)

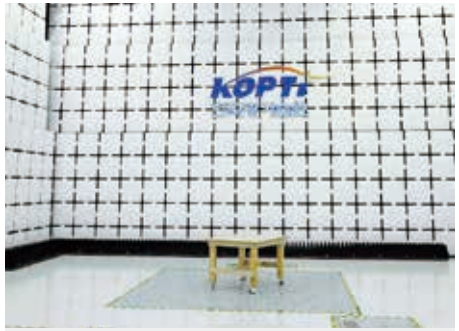
Small Bi-conical Antenna (80MHz ~ 3GHz)
Schwarzbeck
(SBA9113B)

Monopole Antenna (9kHz ~ 30MHz)
Schwarzbeck
(VAMP9243)

EMC TEST CHAMBER AND MEASUREMENT SOLUTIONS

- Providing turnkey solutions for EMC / EMI chambers, including technical advice, design, manufacturing production, construction, SE testing and follow-up management.
- Manufacturing manual / semi-automatic, automatic and various specifications of electromagnetic shielding door and performing reliability tests
- Provide high-quality Commercial / Automotive / MIL-STD chambers

5G Shielded Room



10m EMC Chamber

3m EMC Chamber

RF Shielded Room

SAR Chamber

MRI Shielded Room

10m EMC Chamber

- 30MHz ~ 18GHz (Optional 40GHz)

3m EMC Chamber

- 30MHz ~ 18GHz (Optional 40GHz)

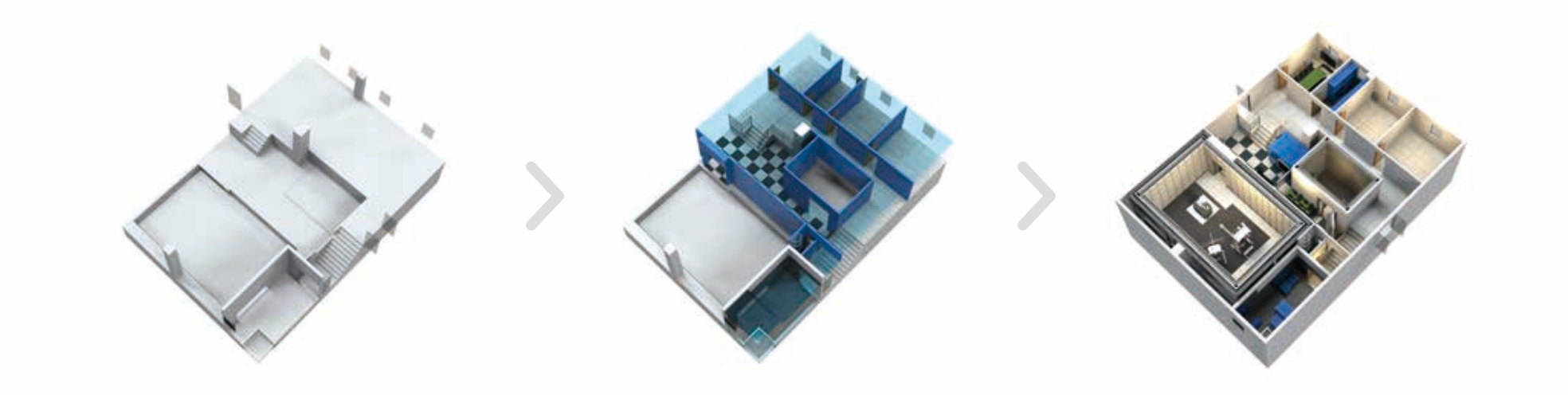
Compact EMC Chamber

- 30MHz ~ 18GHz

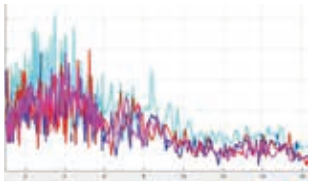
Perfotmance

- NSA : ±3.0dB (HOR & VER)
- SVSWR : ±5.0dB (HOR & VER)
- Field Uniformity : 0 to ±6dB / 75% ↑

TURNKEY PROCESS



TURNKEY PROCESS



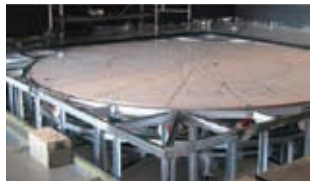
① Pre-Simulation for chamber performance check

② H-Beam and shielding panel construction

③ Shielding door installation

④ Shielding Effectiveness (SE) test evaluation

⑤ Raised Floor construction



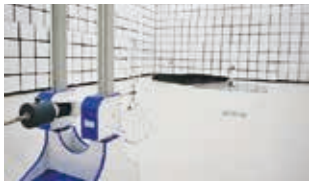
⑥ Turn table construction

⑦ Ferrite tile construction

⑧ Hybrid absorber construction

⑨ CCTV installation

⑩ Internal interior construction



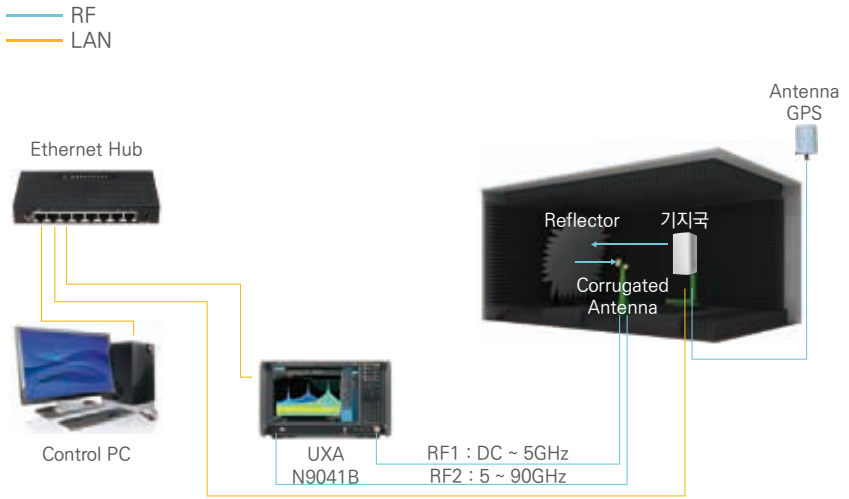
⑪ Final performance test and evaluation

⑫ Internal, external interior finishing

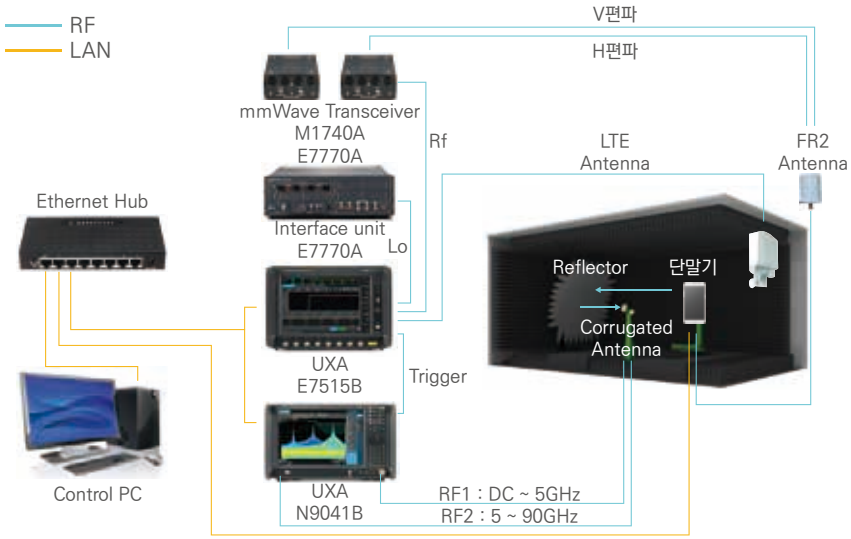
5G MOBILE COMMUNICATION DEVICE TEST CHAMBER

- Designed to test 5G Mobile communication terminals and base station equipment without interfering signal from outside.
- Test Chamber for measuring total radiated power (TRP) for base stations, repeaters, cell phones, etc. with 5G technology in 28GHz band.

BASE STATION MEASUREMENT CHAMBER



TERMINAL MEASURING CHAMBER

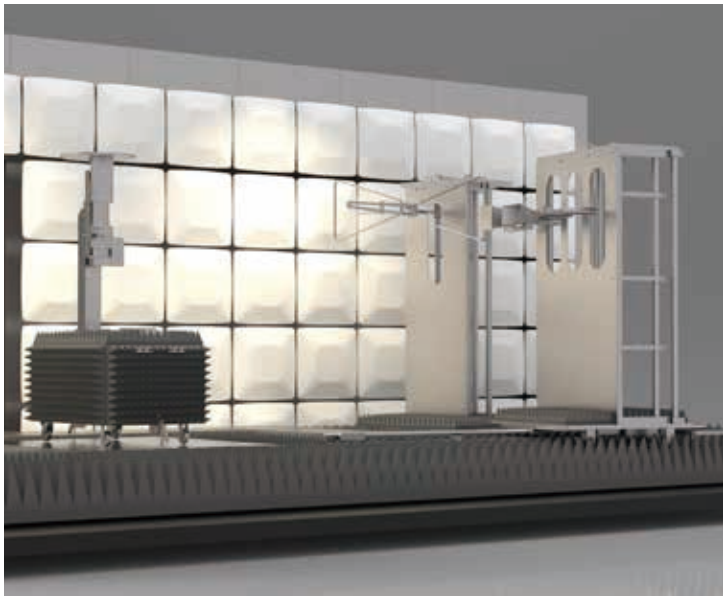


5G Base Station Measurement System		
Measured frequency : minimum 6 ~ 60GHz	Measurement area (Quiet Zone) : 80cm in diameter	Size : 6.8(W) x 3.8(D) x 3.8(H) m

Terminal Measuring Chamber		
Measured frequency : minimum 6 ~ 60GHz	Measurement area (Quiet Zone) : 30cm in diameter	Size : 4.2(W) x 2.6(D) x 2.6(H) m

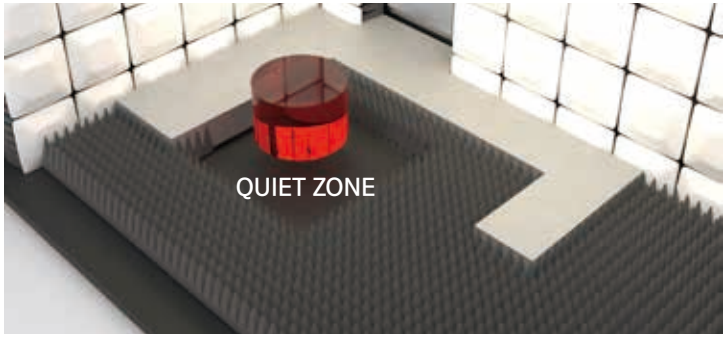
RSE TEST CHAMBER

International Standard Mobile & Wireless Test Chamber

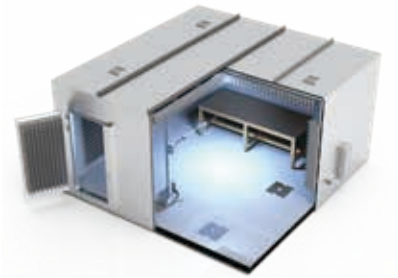


TECHNICAL SPECIFICATIONS

RF Shielded Test Dimension	10.0(L) x 5.0(W) x 5.0(H) m (Chamber outer diameter)
Frequency Band	30MHz ~ 40GHz (~200GHz Optional)
Antenna to DUT Measurement Distance	3.0m with 0.5m min. (1.5m Turntable, 3D Positioner)
NSA Verification	≤ ± 4.0dB @ 30MHz ~ 1GHz (CISPR 16 – 1 – 4)
SVSWR Verification	≤ 6.0dB @ 1GHz ~ 18GHz (CISPR 16 – 1 – 4)
NSA 18 ~ 40 GHz Expansion Verification	≤ ± 4.0dB (ETSI TS 102 321)



EMC CHAMBER

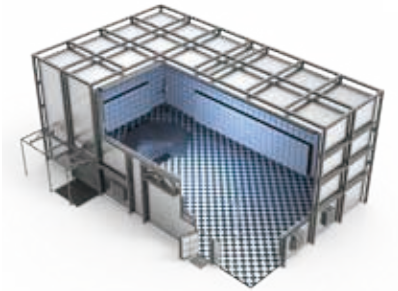


MIL-STD CHAMBER

- Dimension: 5.0(L) x 5.0(W) x 3.0(H) m, (Ferrite tile to Ferrite tile) (determined by EUT type and size)
- Frequency Band: 30Mhz/80Mhz to 40Ghz

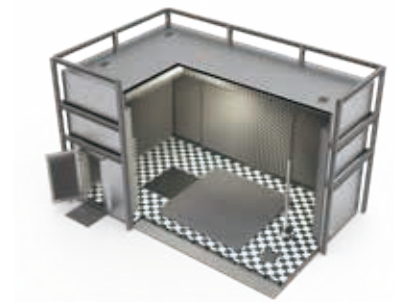
SEMI ANECHOIC CHAMBER (3m)

- Dimension: 9.0(L) x 6.0(W) x 6.0(H) m, (Ferrite tile to Ferrite tile), (determined by EUT type and size)
- Frequency Band: 9kHz/30MHz to 18Ghz (Option 40GHz)



SEMI ANECHOIC CHAMBER (10m)

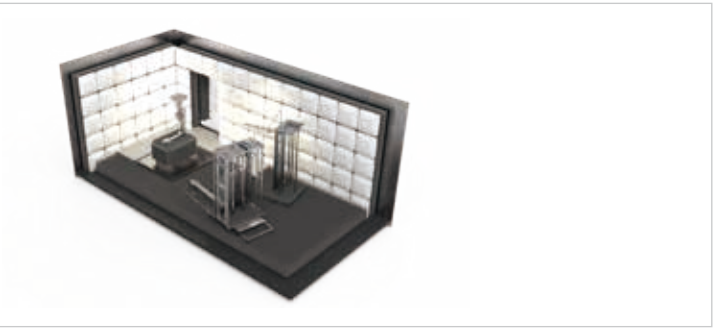
- Dimension: 20.0(L) x 12,0(W) x 8,0(H) m, (Ferrite tile to Ferrite tile), (determined by EUT type and size)
- Frequency Band: 9kHz/30MHz to 18Ghz (Option 40GHz)



FULLY ANECHOIC CHAMBER

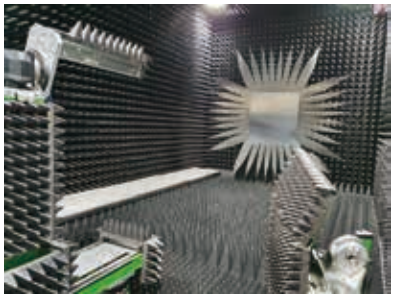
- Dimension: 8.0(L) x 5.0(W) x 4.0(H) m, (Ferrite tile to Ferrite tile), (determined by EUT type and size)
- Frequency Band: 30Mhz to 18GHz (Option 40GHz)

EMC CHAMBER



MIL-STD CHAMBER

- Dimension 10.0(L) x 5.0(W) x 5.0(H) m, (Ferrite tile to Ferrite tile)
- Frequency Band 30Mhz ~ 18GHz (Option ~ 40Ghz, ~ 200GHz)



CATR (Compact Antenna Test Ranges) CHAMBER

- Dimension 4.2(L) x 2.6(W) x 2.6(H) m
- Frequency Band 6.0GHz to 200GHz

FULLY ANECHOIC CHAMBER

- Dimension 8.0(L) x 5.0(W) x 4.0(H) m, (Ferrite tile to Ferrite tile), (determined by EUT type and size)
- Frequency Band 30Mhz to 18GHz (Option 40GHz)

Frequency	Attenuation	Type
10kHz	≥ 70dB	Magnetic Field
199kHz	≥ 100dB	Magnetic Field
1MHz	≥ 100dB	Magnetic Field
100MHz	≥ 110dB	Plane wave
400MHz	≥ 110dB	Plane wave
1GHz	≥ 110dB	Plane wave
18GHz	≥ 100dB	Microwave
40GHz	≥ 80dB	Microwave

LICENSES / CERTIFICATIONS / PATENTS

ISO & Certificate of Electrical, Telecommunications and Mechanical Facilities

Electrical Construction Business Registration Certificate

Information Communication Construction Business Registration Certificate

Facilities & Mechanical Business Certificate

ISO 9001 : 2015

EM Shielding–related Reports / Patents

Report

Shield Door Test Report

Report

EMP Shielding Rack Test Report

Patent

Electromagnetic and Electromagnetic Shielding Room Structure

Patent

Electromagnetic Shielding Room

Design Registration

Electromagnetic Shielding

Design Registration

Door frame for Electromagnetic Shielding

Design Registration

Hinges for Electromagnetic Shield Room Doors

GNSS SOLUTION

GNSS

① GNSS ANTI-JAMMING SOLUTION

② GNSS/INS INTEGRATED NAVIGATION SYSTEM

③ INERTIAL MEASUREMENT UNIT

GNSS ANTI-JAMMING SOLUTION

HAJD 8-array Antenna

HAJD

SAJD-A

SAJD-P

AJDP-A

AJDP-P

OVERVIEW

GNSS Anti-jamming Solution provides GNSS signals anytime and anywhere to get stable PNT solution for critical missions. Anti-jamming Solution consists of nulling-based and beamforming-based antijamming devices. The nulling-based one consists of 3-array or 5-array built-in antenna model and external antenna model. And the internal GNSS receiver can be chosen as option. The beamforming-based one includes the GNSS receiver as its default option inside and the external 8-array antenna as standard model.

But it is readily configurable to 4-, 5-, and 7-array antenna models according to user requirements. Antijamming Solution rejects jamming signals by using our own signal processing algorithm (nulling or beamforming) and transfers the original GNSS signal without jamming signals to ordinary GNSS receivers. Otherwise Anti-jamming Solution can provide stable PNT solution via the built-in GNSS receiver continuously under jamming environment.

APPLICATION

- Armored Vehicle
- Drone
- Military Communications & Base station
- Communication and Electronic Warfare
- Warship and Cost Guard Platform

WITHOUT ARRAY ANTENNA



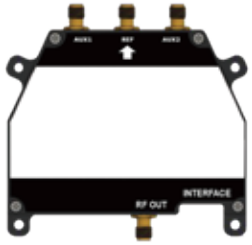

CONTENTS	DESIGN SPECIFICATION	DESCRIPTION
Simultaneous Active Bands	GPS L1 / GLONASS L1 (Additional option : GPS L1 / L2 or GPS L1 / L5)	Simultaneous Independent Nulling
Number of RF Channel	5-channel per band	
RF output	SMA Female	Jamming rejection RF signal
Anti-Jamming Algorithm	5-element Nulling (SFAP)	
Anti-Jamming Performance JSR (dB)	Narrow band jamming (CW) 1ea : 〉90 dB / Wide band jamming (AWGN) 1ea : 〉80 dB	
Built-in GNSS Receiver	GPS L1, SBAS, GLONASS L1, Galileo E1, Sensitivity : -160dBm (Tracking)	Nav Data output : RS-422 (NMEA) 1PPS output : RS-422
Power Consumption (W)	〈 20W @ 28V	
Dimensions (mm)	130 x 130 x 34 (W x D x H)	Except for the installation part
Weight (kg)	〈 1	
Interface	POWER / DATA : MIL-DTL-M38513 / RF : TNC Female	Power, 1PPS, Nav Data, Status
Environmental Tests	MIL-STD-810H	
EMI/EMC	MIL-STD-461G	

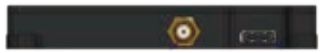
BUILT-IN ARRAY ANTENNA




CONTENTS	DESIGN SPECIFICATION	DESCRIPTION
Simultaneous Active Bands	GPS L1 / GLONASS L1 (Additional option : GPS L1 / L2 or GPS L1 / L5)	Simultaneous Independent Nulling
Number of RF Channel	5-channel per band	
RF output	TNC Female	Jamming rejection RF signal
Anti-Jamming Algorithm	5-element Nulling (SFAP)	
Anti-Jamming Performance JSR (dB)	Narrow band jamming (CW) 1ea : 〉90 dB / Wide band jamming (AWGN) 1ea : 〉80 dB	
Built-in GNSS Receiver	GPS L1, SBAS, GLONASS L1, Galileo E1, Sensitivity : -160dBm (Tracking)	Nav Data output : RS-422 (NMEA) 1PPS output : RS-422
Power Consumption (W)	〈 20W @ 28V	
Dimensions (mm)	135 x 135 x 44 (W x D x H)	Except for the installation part
Weight (kg)	〈 1.2	
Interface	POWER / DATA : HEN.2M.319.XLNP (LEMO) / RF : TNC Female	Power, 1PPS, Nav Data, Status
Environmental Tests	MIL-STD-810H	
EMI/EMC	MIL-STD-461G	

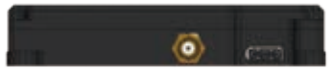
WITHOUT ARRAY ANTENNA





CONTENTS	DESIGN SPECIFICATION	DESCRIPTION
Simultaneous Active Bands	GPS L1	GLONASS L1 / BDS B1 Bypass
Number of RF Channel	3-channel (1 band)	
RF output	SMA Female	Jamming rejection Rf signal
Anti-Jamming Algorithm	3-element Nulling	
Anti-Jamming Performance JSR (dB)	Narrow band jamming (CW) 1ea : 〉75 dB / Wide band jamming (AWGN) 1ea : 〉65 dB	
Built-in GNSS Receiver	GPS L1, SBAS, GLONASS L1, Galileo E1, Sensitivity : -160dBm (Tracking)	USB-C Nav Data output (NMEA)
Power Consumption (W)	2.2W @ 5V	With Active Antenna DC feed
Dimensions (mm)	85 x 66 x 12 (W x D x H)	Except for the installation part
Weight (g)	〈 80	Except Ext. Antenna weight
Interface	USB-C, RF SMA Female	Power, Nav Data, Status
Operating Temperature	-40℃ ~ +85℃	
Dust & Waterproof	IP67	RF DC-Feeding only

BUILT-IN ARRAY ANTENNA



CONTENTS	DESIGN SPECIFICATION	DESCRIPTION
Simultaneous Active Bands	GPS L1	GLONASS L1 / BDS B1 Bypass
Number of RF Channel	3-channel (1 band)	
RF output	SMA Female	Jamming rejection Rf signal
Anti-Jamming Algorithm	3-element Nulling	
Anti-Jamming Performance JSR (dB)	Narrow band jamming (CW) 1ea : 〉75 dB / Wide band jamming (AWGN) 1ea : 〉65 dB	
Built-in GNSS Receiver	GPS L1, SBAS, GLONASS L1, Galileo E1, Sensitivity : -160dBm (Tracking)	USB-C Nav Data output (NMEA)
Power Consumption (W)	2.5W @ 5V	Built-in Array Antenna
Dimensions (mm)	85 x 66 x 16.4 (W x D x H)	Except for the installation part
Weight (g)	〈 110	Built-in Array Antenna
Interface	USB-C, RF SMA Female	Power, Nav Data, Status
Operating Temperature	-40℃ ~ +85℃	
Dust & Waterproof	IP67	RF DC-Feeding only

HIGH-PERFORMANCE ANTI-JAMMING DEVICE

CONTENTS	DESIGN SPECIFICATION	DESCRIPTION
Simultaneous Active Bands	L1 / L2 / L5 / L6 / S	Simultaneous Independent Beamforming
Number of RF Channel	3-channel (1 band)	
RF output	8-channel per band	
Anti-Jamming Algorithm	Beamforming	
Anti-Jamming Performance JSR (dB)	Narrow band jamming (CW) 1ea : 〉110 dB Wide band jamming (AWGN) 1ea : 〉100 dB	
Power Consumption (W)	〈 100W @ 28V	
Dimensions (mm)	245 x 245 x 98.7 (W x D x H)	Except for the installation part
Weight (g)	〈 7	
Interface	POWER / DATA : D38999/20WD35PN	Power, 1PPS, Nav Data, Status
Environmental Tests	〈 110	
EMI/EMC	MIL-STD-810H MIL-STD-461GIP67	

MARION XND51A

FEATURE

- Adaptive Kalman filter based on GNSS RTK.
- Fault detection and isolation for optimal solution
- Real-time navigation update up to 200hz
- Low vibration rectification error (VRE)
- Wide dynamic range & Low noise density
- Hardware / Software design proven through military application
- ITAR free

OVERVIEW

The XND51is an GNSS/INS integrated navigation system that can be used to measure position, velocity, attitude, angular rate and acceleration under dynamic conditions. It is a highly integrated, compact, light, and fully self-contained navigation system. It encloses three axis gyroscopes, three axis accelerometers and a GNSS receiver. The XND51is designed to be utilized in tactical grade navigation and accurate control applications. Internally, it implements a Kalman filter that integrates inertial sensor data and GNSS information. Robust hardware design techniques apply to the XND51for MIL-STD-810, MIL-STD-461.

DISTINCTIVE CHARACTERISTIC

OPTIMIZED ALGORITHMS

- Adaptive Kalman filter for each dynamics
- Available for land, air, marine application

FILTERING FOR UNCERTAINTY

- Fault Detection and Isolation for harsh GNSS environment
- Robust filtering technique with uncertain environment

ERROR SUPPRESSION

- Highly sophisticated error identification and calibration
- In-run sensor error compensation
- Based on GNSS RTK

EASY TO USE

- Installation in any position and orientation
- Operation in -40 ~ 75℃ and vibrating condition
- IP67 rating

NAVIGATION

PARAMETER			SPECIFICATION	REMARK
Performance	Position	GNSS stand-alone	1.5 m	CEP
		RTK[1]	0.01 m + 1ppm	CEP
	Velocity		0.05 m/s	1σ, with GNSS
	Heading[2]		0.15°	with GNSS (Dual antenna 2m Baseline)
	Roll / Pitch		0.10°	1σ, with GNSS

1: Measured using 1 km baseline and patch antennas with good ground planes. Does not account for possible antenna phase center offset errors. ppm limited to baselines up to 20 km

2: 1 Sigma, measured with 2 m baseline and patch antennas with good ground plane

MECHANICAL & ENVIRONMENTAL

PARAMETER	SPECIFICATION
Weight	〈 650 g
Size	82 x 110 x 60 mm
Operating temperature	-40 ~ +75 °C
IP rating	IP67
Enclosure	Aluminum
Environmental Protection	MIL-STD-810G, MIL-STD-461G

ELECTRICAL & INTERFACES

PARAMETER	SPECIFICATION
Input voltage	10 ~ 36 V
Power consumption	〈 9.0 W
Communication Interface	UART / RS-232, RS-422
Input/Output Interface	VMS / 1PPS
Output rate	Up to 200hz
GNSS connector	SMA

MARION XNI50

FEATURE

- Inertial Measurement Unit (IMU)
- Three-axis MEMS gyroscopes and accelerometers
- Compact size
- Light weight
- High-shock and vibration resistance
- Low power consumption
- Tactical grade performance

OVERVIEW

The XNI50 is an Inertial Measurement Unit (IMU) that measures angular rates and linear accelerations. The XNI50 is composed of three-axis Micro Electro Mechanical System (MEMS) gyroscopes and accelerometers. The XNI50 is specifically designed for navigation, control, and tactical applications. The XNI50 is compact, light and low power consumption. It offers excellent bias stability and scale factor performance. The solid-state MEMS sensor provides long lifetime and performance reliability. The fast start-up time and continuous Built-In Test (BIT) make the XNI50 easy to use in a wide range of high order integrated system applications. The XNI50 satisfies severe vibration, shock, temperature, and EMI/EMX MIL standards, making it suitable for use in various applications such as unmanned vehicles (UAVs), tactical grade guided weapons, and surveillance systems.

SENSORS

PARAMETER	ACCELEROMETERS	GYROSCOPES
Range	±50g (available up to ±75g)	±500°/s (available up to 1000°/s)
Bias repeatability (XNI50FA / XNI50HC / XNI50IE)	5mg (1σ) / 3mg (1σ) / 2mg (1σ)	50°/hr (1σ) / 30°/hr (1σ) / 10°/hr (1σ)
Random walk	0.1 m / s / rt-hr	〈 0.125 ° / rt-hr
Bias in-run Stability	0.02mg	1 ° / hr
Vibration rectification error (VRE)	2mg	30 ° / hr
Alignment error	0.05°	0.05°
Bandwidth	80Hz	80Hz

GENERAL

PARAMETER	UNITS	SPECIFICATIONS
Update rate	Hz	2000
Start-up time	sec	〈 1
Full Accuracy Data (Warm-up Time)	sec	〈 3

PERFORMANCE

GYROSCOPES		
Measurement range	deg/sec	〉±500
Bandwidth (-90 phase lag)	Hz	80
Data update rate	Hz	2000
Bias in-run Stability (Allan Variance, RMS)	deg/hr	1
Bias repeatability (turn-on to turn-on, RMS)	deg/hr	10/30/50
Bias instability (over temperature rage, RMS)	deg/hr	20
SF repeatability	ppm	750/1000/1000
Noise, Angular Random Walk (ARW)	deg/vhr	0.1
Non-linearity	ppm	200
Axis misalignment	mrad	0.15

PERFORMANCE

ACCELEROMETERS		
Measurement range	g	〈 ±71
Bandwidth (–90 phase lag)	Hz	80
Data update rate	Hz	2000
Bias in–run Stability (RMS, Allan Variance)	mg	0.02
Bias repeatability (turn–on to turn–on, RMS)	mg	2/3/5
Bias instability (over temperature rage*, RMS)	mg	0.3
SF accuracy (over temperature range)	ppm	100
SF repeatability	ppm	100/500/500
Noise, Velocity Random Walk (VRW)	m/sec/vhr	0.2
Non–linearity	ppm	150
Axis misalignment	mrad	0.15

ELECTRICAL & MECHANICAL

ENVIRONMENT		
Mechanical shock (MIL-STD-810G)	g	40g, 11ms, Half-sine
Vibration (MIL-STD-810G)	gRMS, Hz	6grms (20-2000hz)
Operating temperature	deg C	-40 ~ +85
Storage temperature	deg C	-50 ~ +90
Low pressure	m	5000
Humidity	%	Up to 95
MTBF (G_M@+65degC, operational)	hours	〉100,000
Lifetime (operational)	years	〉10
Lifetime (storage)	years	〉10

ELECTRICAL		
Supply voltage	V DC	5
Power consumption	Watts	5
Output Interface	-	RS422
Output data format	-	SDLC
EMC/EMI/ESD		MIL-STD-461F

PHYSICAL		
Size	mm	65mm(L) x 36mm(H)
Weight	grams	〈 160
IMU version using customized case & connector	custom	custom

MECHANICAL & ENVIRONMENTAL

PARAMETER	SPECIFICATION
Weight	〈 170g
Size	Φ50.8mm x H36mm (Except flange)
Operating temperature	-40˚C ~ +85 ˚C
Enclosure	Aluminum nickel plating
Shock limit	2000g

ELECTRICAL & INTERFACES

PARAMETER	Specification XNI50
Input voltage	DC+3.3 ~ DC+5.5 V (5.0V, Typ.)
Power consumption	〈 5W (DC+5.0V)
Main connector	MTMM-107-06-L-D-180 (samtec)
Main Serial	SDLC
Output rate	Up to 400hz

ELECTRICAL & INTERFACES

NUMBER	NAME	Function
1	GND	Ground
2	VDD	Power (DC+5V)
9	Data High	SDLC Data High
10	Data Low	SDLC Data Low
13	Clock High	SDLC Clock High
14	Clock Low	SDLC Clock Low
3,4,5,6	NC	Not Connect
7,8,11,12	NC	Not Connect

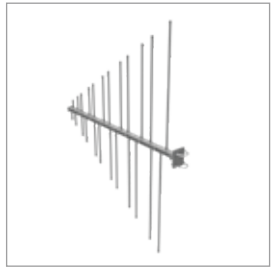
ANTENNA SOLUTIONS

ANTENNA

① MONITORING ANTENNAS ② COMMUNICATION ANTENNAS

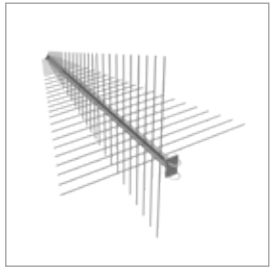
③ DIRECTION FINDING ANTENNAS ④ MOBILE ANTENNAS

MONITORING ANTENNAS



V/UHF LPDA ANTENNA
(DY-LPDA-A01-001)

WIRE DISCONE
ANTENNA
(DY-DISCONE-A02-001)

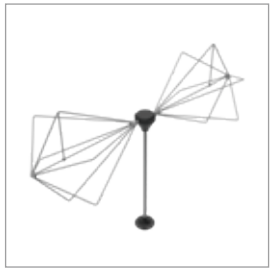


DUAL-POLARIZED
LPDA ANTENNA
(DY-DLPDA-A03-001)

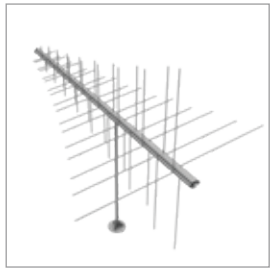
DOUBLE-RIDGED
HORN ANTENNA
(DY-HORN-A07-001)

CAVITY BACKED
SPIRAL ANTENNA
(DY-SPIRAL-A05-002)

BROADBAND LPDA
ANTENNA
(DY-LPDA-A01-004)



BICONICAL ANTENNA
(DY-BICONICAL-A08-001)



DUAL-POLARIZED
LPDA ANTENNA
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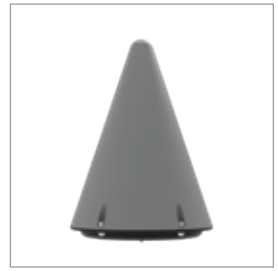
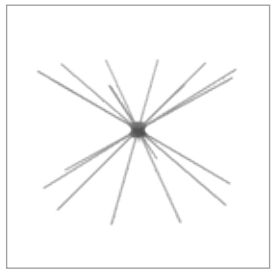
DUAL-POLARIZED
OMNI ANTENNA
(DY-OMNI-A00-003)



DUAL POLARIZED
LPDA ANTENNA
(DY-DLPDA-A03-003)

MONITORING ANTENNAS



BICONICAL ANTENNA
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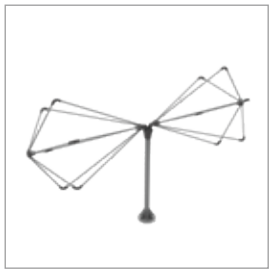


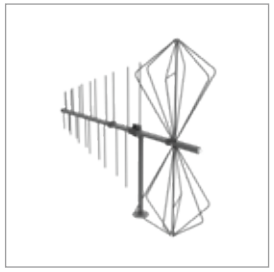
BICONICAL ANTENNA
(DY-BICONICAL-A08-003)

HYBRID LPDA
ANTENNA
(DY-LPDA-A01-008)

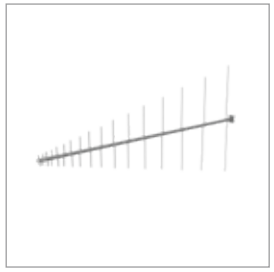
WIDEBAND LPDA
ANTENNA
(DY-LPDA-A01-009)

WIDEBAND LPDA
ANTENNA
(DY-LPDA-A01-010)

CORNER REFLECTOR
ANTENNA
(DY-CRA-A22-002)



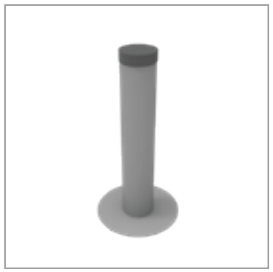
BICONICAL LPDA
ANTENNA
(DY-BILPDA-A11-001)



WIDEBAND LPDA
ANTENNA
(DY-LPDA-A01-003)

COMMUNICATION ANTENNAS

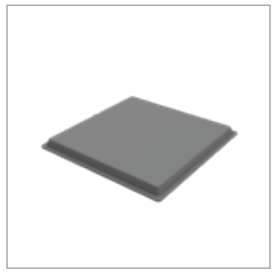
OMNI ANTENNA
(DY-OMNI-A00-001)



DUAL HELICAL ANTENNA
(DY-DHELICAL-A04-001)

LPDA ANTENNA
(DY-LPDA-A01-002)

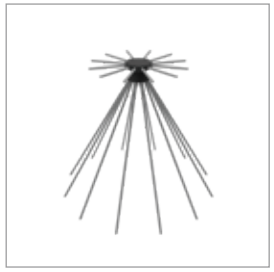
WLAN OMNI ANTENNA
(DY-OMNI-A00-002)



FLAT PANEL ANTENNA
(DY-PANEL-A06-001)

WIDEBAND DISCONE ANTENNA
(DY-DISCONE-A02-002)

HELICAL ANTENNA
(DY-HELICAL-A14-002)



WIDEBAND DISCONE ANTENNA
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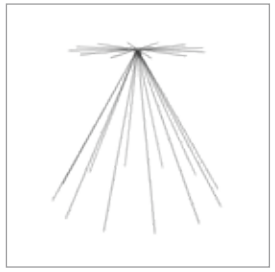

DISCONE ANTENNA
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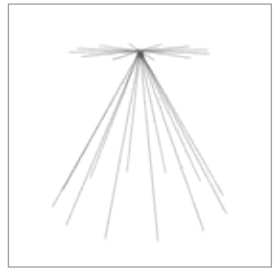
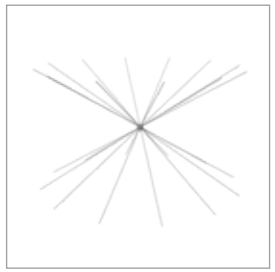


DISCONE ANTENNA
(DY-DISCONE-A02-005)

COMMUNICATION ANTENNAS

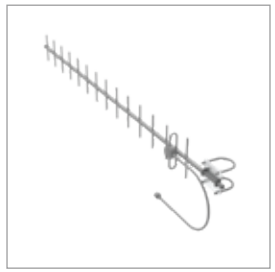


V/UHF BICONICAL ANTENNA
(DY-BICONICAL-A08-002)

WIDEBAND LPDA ANTENNA
(DY-LPDA-A01-006)

WIDEBAND LPDA ANTENNA
(DY-LPDA-A01-007)

OMNI ANTENNA
(DY-OMNI-A00-004)



YAGI ANTENNA
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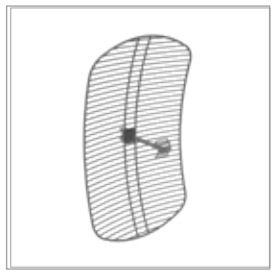
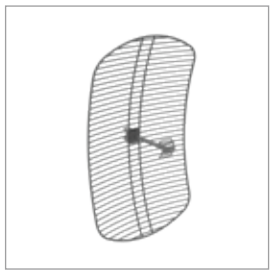


GPA ANTENNA
(DY-GPA-A10-001)



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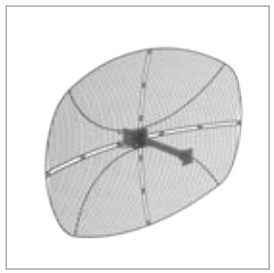

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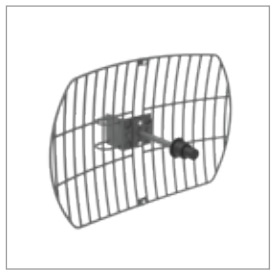

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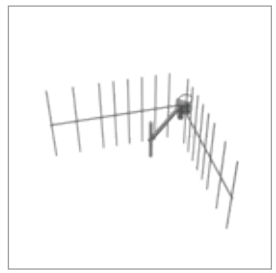
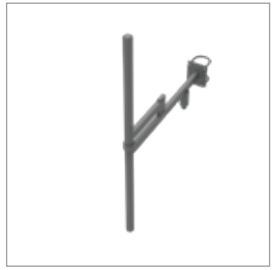
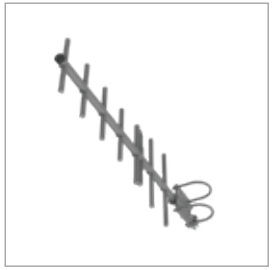


CORNER REFLECTOR ANTENNA
(DY-CRA-A22-001)

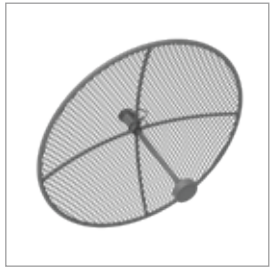
COMMUNICATION ANTENNAS



BROADBAND DIPOLE ANTENNA (DY-DA-A30-001)



WIDEBAND YAGI ANTENNA (DY-YAGI-A09-002)

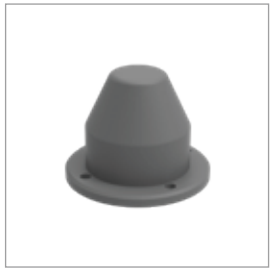


MESH TYPE GPA ANTENNA (DY-GPA-A10-005)

WIDEBAND LPDA ANTENNA (DY-LPDA-A01-011)

FOLDED DIPOLE ANTENNA (DY-DA-A30-002)

WIDEBAND LPDA ANTENNA (DY-DA-A01-013)

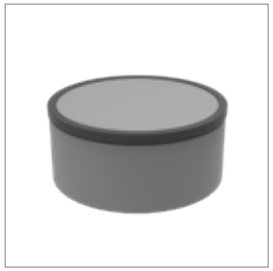


OMNI ANTENNA (DY-OMNI-A00-005)

CORNER REFLECTOR ANTENNA (DY-CRA-A22-003)

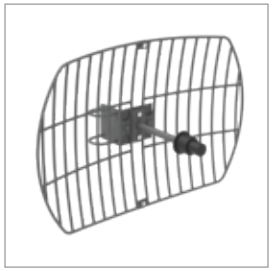
DIRECTION FINDING ANTENNAS

ULTRA-WIDEBAND
LPDA ANTENNA
(DY-LPDA-A01-012)



CAVITY BACKED
SPIRAL ANTENNA
(DY-SPIRAL-A05-001)

MOBILE ANTENNAS



V/UHF LPDA ANTENNA
(DY-LPDA-A01-005)

MAJOR CUSTOMER

ELECTRONIC MANUFACTURERS

SAMSUNG LG

MOBILE SERVICE PROVIDER

SK telecom olleh kt LG U+

CERTIFICATION AUTHORITIES

HCT ktl Korea Testing Laboratory Dt&C SGS eurofins KCTL ONETECH
KTR NTREE EST UL NCT Nemko

AUTOMOBILE MANUFACTURES

HYUNDAI KIA SAMSUNG 르노삼성자동차 CHEVROLET 쌍용자동차

UNIVERSITY

한양대학교 KAIST 인하대학교 INHA UNIVERSITY 홍남대학교 충북대학교 경운대학교
숭실대학교 서울대학교 연세대학교 고려대학교 가천대학교 Gachon University 인천대학교

AEROSPACE

kt sat SI KAI KARI 한화에어로스페이스

OVERSEAS


Saudi Arabia
2019


Poland
2020


Singapore
2021


Indonesia
2022


Malaysia
2023

GOVERNMENT & MILITARY AGENCIES

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