



## **Icom:**

High Quality, Exceptional Reliability,  
and Global Sustainability

# Icom Incorporated

## Icom, the wireless communication experts

Icom Inc. is a company located in Osaka, Japan, and is a manufacturer of wireless communication products. Since Icom's establishment in 1954, we have had a long record as a trusted manufacturer of land mobile radio, amateur radio, marine radio, navigation products, aviation radio and communications receivers.



## Icom quality and Icom reliability

Over 50 years of engineering and production excellence is a part of every Icom product. Using the latest equipment, Icom radios are tested to pass rigorous in-house tests as well as environmental tests to the US Military standard 810 specifications. Icom's products are also compliant with the European RoHS directive.



## Made in Japan quality

Icom is a rare example of an electronics manufacturer that has not shifted production to lower cost countries, but kept its production base 100% in Japan. The Wakayama Icom plants have an advanced production system to produce small volume/multi-model wireless communication products.



## Icom, a world brand name

Icom is recognized today as a reliable 2-way radio brand name around the world. Our land mobile radios are used by many professional organizations, public and private. The United States Marine Corps chose Icom as their first Japanese radio supplier.



## Icom's worldwide network

Icom products are sold in over 80 countries in the world. Icom has an international sales and service network around the world, including sales subsidiaries in the US, Australia, Germany, Spain and China. Icom is here to support and service our products and your communication needs.



# Icom Quality and Reliability

## Icom's Quality Policy

### “To Secure a Quality Level Trusted by Our Customers ”

Icom Inc. will establish and continually improve our production system to produce safe and high quality products with the complete understanding of the significance of the requirements and the importance of compliance under ISO9001:2000/JIS Q 9001:2000, and the above Quality Policy. We will also establish the quality target, and progress towards its achievement shall be continually checked. In each division, the achievement of our target shall be done by increased work efficiency in a clean and tidy environment to obtain maximum customer satisfaction. The Quality Policy shall be reviewed by the Management continually.



### “Made in Japan policy, demanding High Productivity and realizing High Quality”

Icom Inc. has two production facilities, and it maintains a successful ‘Made in Japan’ policy, demanding ‘High Productivity’ and realizing ‘High Quality’ throughout all of its operations.



Arida Factory



Kinokawa Factory

### “Icom products meet International Testing Standards and satisfy each customer's needs”

Icom Inc. has accumulated technical expertise and know-how to develop and manufacture the products that meet a wide variety of International Testing Standards to match our customers' needs.



Environmental Tests Passed



Submersible Compliance



Intrinsically Safe Approved

# Icom Quality and Reliability

Below are some of the technical standards Icom radios meet or exceed. Different models meet different standards based on customer needs.

- **TIA/EIA603, TIA/EIA TSB102** technical standard compliance

**TIA/EIA603** is the Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

**TIA/EIA TSB102** is the Telecommunications System Bulletin for Digital C4FM/CQPSK Transceivers Measurement Method.

- **EN 300-086** technical standard compliance

This standard is intended to specify the minimum performance and the methods of measurement of radio equipment for use in the land mobile service.

- **FM** intrinsically safe approved

**FM** approvals are intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation.

- **ATEX** intrinsically safe approved

The **ATEX** Directive is a legal requirement in all European Union Member States if equipment is intended for use in potentially explosive atmospheres.

- **IP54, IP55, IPx7, IPx8** dust/water resistance and submersible compliance

International Standard **IEC 60529** outlines an international classification system that describes the sealing characteristics of electrical equipment. It defines the level of protection provided by enclosures to prevent the ingress of foreign objects and moisture into the electrical equipment.

- **MIL-STD-810F** environment testing standards

The **MIL-STD-810** series of standards are issued by the United States Army's Developmental Test Command to specify various environmental tests to prove that equipment qualified to the standard will survive in the field.



The **Electronic Industries Alliance** (EIA, until 1997 **Electronic Industries Association**) is a trade organization composed as an alliance of trade associations for electronics manufacturers in the United States.



The Telecommunications Industry Association (TIA) is the leading trade association representing the global information and communications technology (ICT) industries.



This European Telecommunication Standard has been prepared by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).



FM Approvals tests and approves electrical equipment in accordance with Approval Standards and/or American National Standards Institute (ANSI) standards. Hazardous location electrical equipment testing is one of FM Approvals' largest product categories.



The ATEX Directive is a legal requirement in all European Union Member States if an equipment intended for use in potentially explosive atmospheres.



The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies.



A United States Defense Standard, called a "MIL-STD", is used to help achieve standardization objectives by the U.S. Department of Defense.

# Icom Quality and Reliability

**“Icom designs its radios to comply with all relevant health, safety and environmental protection regulations to ensure the safety of users is maintained to the strictest standards”**

- Icom radios comply with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

**FCC OET Bulletin 65 Edition 97-01**  
Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

American National Standards Institute (**C95.1-1992**), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

American National Standards Institute (**C95.3-1992**), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields— RF and Microwave.

In addition, Icom radios have been tested and comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

- CE version of Icom Radios which display the “CE” symbol on the serial number seal, comply with the essential requirements of the European Radio and Telecommunication Terminal Directive **1999/5/EC**.

The CE Marking on a product is a manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislations, in practice by many of the Product Directives.



The Federal Communications Commission (FCC) is an independent United

States government agency. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. The FCC's jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions.



As the voice of the U.S. standards and conformity assessment system, the American National Standards Institute (ANSI) empowers its members and constituents to strengthen the U.S. marketplace position in the global economy while helping to assure the safety and health of consumers and the protection of the environment.



A non-profit organization, IEEE is the world's leading

professional association for the advancement of technology.

The IEEE name was originally an acronym for the Institute of Electrical and Electronics Engineers, Inc. Today, the organization's scope of interest has expanded into so many related fields that it is simply referred to by the letters I-E-E-E (pronounced Eye-triple-E).



The **CE marking** (also known as the **CE mark**) is a mandatory conformity mark on

many products placed on the single market in the European Economic Area (EEA). The **CE marking** certifies that a product has met EU consumer safety, health or environmental requirements.



# Icom Quality and Reliability

## Submersible/Waterproof knowhow for transceivers born from know-how in Marine Transceivers

Icom has a long history in developing and manufacturing marine transceivers. A Submersible/ Waterproof feature is a natural requirement of marine transceivers. The models below are examples of submersible/waterproof transceivers from Icom.



### VHF/UHF HANDHELD TRANSCEIVERS

## IC-F50 IC-F60



The IC-F50V series has outstanding protection against dust and water that is equivalent to IP67. The ICF50V series can withstand submersion in 1m depth of water for up to 30 minutes and has dust-tight construction that prevents the ingress of dust.



### VHF MARINE TRANSCEIVER

## IC-M34



Built tough to withstand the punishing marine environment, the transceiver's submersible construction meets IPX7\* requirements for waterproof protection (1 meter/3.3 ft depth for 30 min.).

The world's first 5W VHF marine transceiver that floats on fresh or salt water even when the supplied accessories are attached.



### SURVIVAL CRAFT 2-WAY VHF RADIO

## IC-GM1600

The IC-GM1600 meets temperature, thermal shock, vibration and drop resistant (from 1 m height) requirements. After passing those environmental tests, the IC-GM1600 retains 1m depth waterproof construction as specified by IMO resolutions A.809(19), A.694(17), MSC149(77) and related specifications.

### SURVIVAL CRAFT 2-WAY VHF RADIO

## IC-GM1600E

The IC-GM1600E complies with the EU Marine Equipment Directive (MED) (96/98/EC) to be carried and used on ships registered under the European Union.

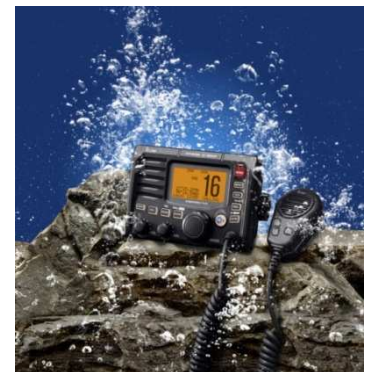


### VHF MARINE TRANSCEIVER

## IC-M504



The IC-M504 withstands submersion in up to 1.5m depth of water for 30 minutes. It is equivalent to the IPX8 standard. All products are rigorously checked to pass quality test at the factory.



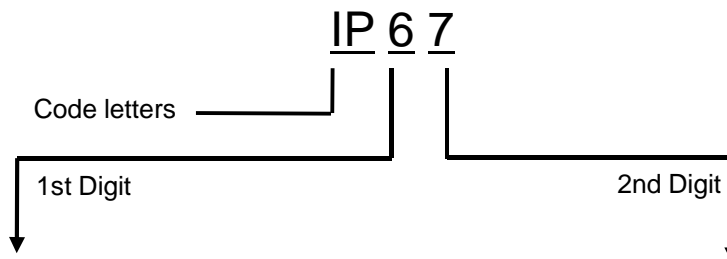
# Icom Quality and Reliability







## IP CLASSIFICATION CODES




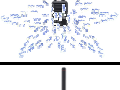




Ingress Protection (IP) ratings are developed by the European Committee for Electro Technical Standardization.

International Standard IEC 60529 outlines an international classification system that describes the sealing characteristics of electrical equipment. The classification system defines the level of protection provided by enclosures to prevent the ingress of foreign objects and moisture into the electrical equipment.

The classification system uses the “IP” code, or “Ingress Protection” code, to define the level of seal. An IP number contains two numbers (i.e. IP67) in most instances which relate to the level of protection provided by an enclosure or housing. Either number may be shown as “X” (i.e. IPX6 / IP7X) to indicate the “X” part is not tested.



Degrees of Protection (Foreign Bodies) – 1st Digit	
IP Level	Description of Protection Level
0	Not protected
1	Protected against foreign solid objects of 50 mm diameter and greater (Protects against a large surface of the body, such as the back of a hand) 
2	Protected against foreign solid objects of 12.5 mm diameter and greater (Protects against fingers or similar objects) 
3	Protected against foreign solid objects of 2.5 mm diameter and greater (Protects against tools, thick wires, etc.) 
4	Protected against foreign solid objects of 1.0 mm diameter and greater (Protects against most wires, screws, etc.) 
5	Protected from the amount of dust that would interfere with normal operation 
6	Dust tight (No ingress of dust; complete protection against contact) 

Degrees of Protection (Moisture) – 2nd Digit	
IP Level	Description of Protection Level
0	Not protected
1	Protected against vertically falling water drops 
2	Protected against vertically falling water drops when enclosure is tilted up to 15° 
3	Protected against water sprayed at an angle up to 60° on either side of the vertical 
4	Protected against water splashed against the component from any direction 
5	Protected against water projected in jets from any direction 
6	Protected against water projected in powerful jets from any direction 
7	Protected against temporary immersion in water between 15cm and 1m for 30min. 
8	Protected against continuous immersion in water, beyond 1m. 

# Icom Quality and Reliability

## INTRINSICALLY SAFE TYPE APPROVAL

### □ FM Intrinsically safe version

Intrinsically safe transceivers offer safety approved 2-way communication preventing explosion and fire hazard in specified hazardous areas.



### What is FM Approval?

FM Approvals are intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of FM Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

A number of Icom transceivers meet this regulation which display the "FM APPROVED" symbol as at left on the serial number seal, conform to intrinsically safe ratings of the FM Global Corporation.

The repair and maintenance of an FM approved transceiver can only be performed in an approved repair facility. The FM approval will be canceled if FM intrinsically safe radios are repaired anywhere else except in an approved facility.

There are versions that conform to intrinsically safe rating of the FM Approvals.

- Intrinsically safe : Class I, II, III, Division 1, Groups C, D, E, F, G
- Nonincendive : Class I, Division 2, Groups A, B, C, D hazardous locations
- Temperature Class: T3C



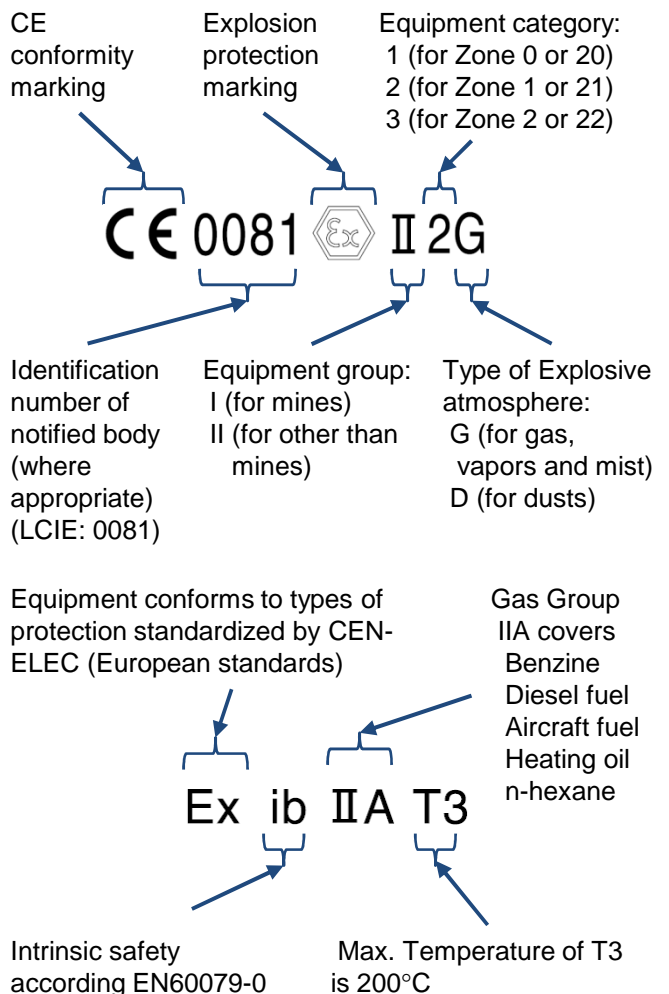
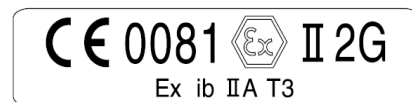
### □ ATEX Intrinsically safe version

The ATEX Directive is a legal requirement in all European Union Member States if an equipment intended for use in potentially explosive atmospheres.



ATEX versions of the Icom transceivers which display the "EX" marking on the serial number seal.

The approval rating for these models is II2G Ex ib IIA T3.





# Icom Quality and Reliability

## PASSED MIL-STD-810F ENVIRONMENTAL TEST

Icom makes rugged products that have been tested to and passed the following MIL-STD requirements and strict environmental standards. The purpose and procedure of each standard is briefly described in the following pages. Icom performs MIL-STD testing in-house as well as with independent laboratories.



\*The applied standards differ depending on model.

Standard	Method	Procedure
LOW PRESSURE (ALTITUDE)	500.4	I - Storage/Air Transport.
		II - Operation/Air Carriage.
HIGH TEMPERATURE	501.4	I - Storage.
		II - Operation.
LOW TEMPERATURE	502.4	I - Storage.
		II - Operation.
TEMPERATURE SHOCK	503.4	I - (Steady State)
SOLAR RADIATION (SUNSHINE)	505.4	I - Cycling (heating effects).
RAIN	506.4	I - Rain and Blowing Rain
		III - Drip.
HUMIDITY	507.4	
SALT FOG	509.4	
SAND AND DUST	510.4	I - Blowing Dust.
IMMERSION	512.4	I - Immersion.
VIBRATION	514.5	I - General vibration.
SHOCK	516.5	I - Functional Shock.
		IV - Transit Drop.



Temperature Chamber



Altitude Simulation Chamber



Vibration Tester



Salt Fog Chamber

## LOW PRESSURE (ALTITUDE) METHOD 500.4

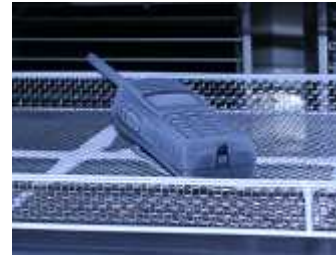
Use low pressure (altitude) tests to determine if radios can withstand and/or operate in a low pressure environment and/or withstand rapid pressure changes.

- **Procedure I - Storage/Air Transport.**

Procedure I is appropriate if the radio is to be transported or stored at high ground elevations or transported by air in its shipping/storage configuration.

- **Procedure II - Operation/Air Carriage.**

Use Procedure II to determine the performance of the radios under low pressure conditions.



Low Temperature Test

## HIGH TEMPERATURE METHOD 501.4

Use high temperature tests to obtain data to help evaluate effects of high temperature conditions on radios safety, integrity, and performance.

- **Procedure I - Storage.**

Use Procedure I to investigate how high temperatures during storage affect the radios (integrity of materials, and safety/performance of the radios).

- **Procedure II - Operation.**

Use Procedure II to investigate how high ambient temperatures may affect radios performance while it is operating.



Temperature Chamber

## LOW TEMPERATURE METHOD 502.4

Use low temperature testing to measure how low temperature conditions during storage, operation, and manipulation affect radios safety, integrity, and performance.

- **Procedure I - Storage.**

Use Procedure I to investigate how low temperatures during storage affect radios safety during and after storage, and performance after storage.

- **Procedure II - Operation.**

Use Procedure II to investigate how well the radios operates in low temperature environments.



Rapid Thermal Shock Chambers

## TEMPERATURE SHOCK METHOD 503.4

Use temperature shock tests to determine if radios can withstand sudden changes in the temperature of the surrounding atmosphere without experiencing physical damage or deterioration in performance.

- **Procedure I (Steady State)**

Procedure I employs constant temperature at each of the extreme shock conditions because, in many instances, the thermal shock itself so outweighs the other thermal effects that the test may be performed using two constant temperatures.

## **SOLAR RADIATION (SUNSHINE) METHOD 505.4**

To determine the heating effects of direct solar radiation on radios. And to help identify the actinic (photodegradation) effects of direct solar radiation.

- **Procedure I – Cycling (heating effects).**

Use Procedure I to investigate response temperatures when radios is exposed in the open in realistically hot climates and is expected to perform without degradation during and after exposure.



Rain Test

## **RAIN METHOD 506.4**

The purpose of this method is to help determine the effectiveness of protective covers, cases, and seals in preventing the penetration of water into the radios. Also the capability of the radios to satisfy its performance requirements during and after exposure to water.

- **Procedure I - Rain and Blowing Rain**

Procedure I is applicable for radios which will be deployed out doors and which will be unprotected from rain or blowing rain.

- **Procedure III - Drip.**

Procedure III is appropriate when the radio is normally protected from rain but may be exposed to falling water from condensation or leakage from upper surfaces.

## **HUMIDITY METHOD 507.4**

The purpose of this method is to determine the resistance of radios to the effects of a warm, humid atmosphere.

Test duration of the minimum number of 48-hour cycles for this test is five. Temperature/humidity levels are 60° C and 95% RH



Salt Fog Test

## **SALT FOG METHOD 509.4**

The salt fog method is performed to determine the effectiveness of protective coatings and finishes on materials.

Use a  $5 \pm 1\%$  salt solution concentration.

## **SAND AND DUST METHOD 510.4**

These tests are performed to help evaluate the ability of radios to resist the effects of dust that may obstruct openings, penetrate into cracks, crevices, bearings, and joints and to evaluate the effectiveness of filters.

- **Procedure I - Blowing Dust.**

Use Procedure I to investigate how susceptible radios is to concentrations of blowing dust ( $< 149 \text{ Pm}$ ).



Blowing Dust Test

## **IMMERSION** **METHOD 512.4**

The immersion test is performed to determine if radios can withstand immersion or partial immersion in water and operate as required during or following immersion.

- **Procedure I - Immersion.**

Procedure I (Immersion) primarily addresses leakage during immersion of encased radios.

Depth of immersion is 1m.

Duration of immersion is 30-minutes



Immersion Test

## **VIBRATION** **METHOD 514.5**

Develop radios to function in and withstand the vibration exposures of a life cycle including synergistic effects of other environmental factors, radios duty cycle, and maintenance. Although verify that radios will function in and withstand the vibration exposures of a life cycle.

- **Procedure I - General vibration.**

Use Procedure I for those cases where a test item is secured to a vibration exciter and vibration is applied to the test item at the fixture/test item interface. Steady state or transient vibration may be applied as appropriate.



Vibration Test

## **SHOCK** **METHOD 516.5**

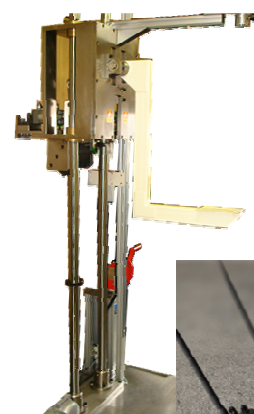
Shock tests are performed to provide a degree of confidence that radios can physically and functionally withstand the relatively infrequent, non-repetitive shocks encountered in handling, transportation, and service environments, and determine the radio's fragility level, in order that packaging may be designed to protect the radio's physical and functional integrity.

- **Procedure I - Functional Shock.**

Procedure I is intended to test radios (including mechanical, electrical, hydraulic, and electronic) in its functional mode and to assess the physical integrity, continuity and functionality of the radios to shock. In general, the radios is required to function during the shock and to survive without damage to shocks representative of those that may be encountered during operational service.

- **Procedure IV - Transit Drop.**

Procedure IV is intended for radios either outside of or within its transit or combination case, or as prepared for field use (carried to a combat situation by man, truck, rail, etc.). This procedure is used to determine if the radios is capable of withstanding the shocks normally induced by loading and unloading when it is outside of its transit or combination case, or inside its transit or combination case. Such shocks are accidental, but may impair the functioning of the radios.





# Environmental Policy

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## Basic Philosophy

Icom Inc. fully recognizes that "global environmental conservation" is a future important issue common to human beings, and promotes activities conscious of environmental conservation in every stage of its business activity.

## Key Principles

- 1 Our company builds an environmental management system in order to continuously improve the environmental impact of its business activities, products and services, and prevent contamination.
- 2 Our company determines environmental purposes and goals in the environmental management system, and continuously implements the system according to the plan through regular reviews.
- 3 Our company attempts to save energy and material and reduce wastes in its business activities, products and services.
- 4 The business activities, products and services of our company comply with the environment-related laws and regulations, etc.
- 5 Our company makes this environmental policy known to its all employees or those working for our company in order to implement and maintain this environmental policy. Our company makes education and enlightenment to improve consciousness of environment and address the environmental conservation.
- 6 Our company discloses this environmental policy both internally and externally.

## ISO 14001 certification

In 2003, Icom Inc. obtained ISO 14001 certification.

Icom Inc. has taken deliberate steps to meet its responsibility with regard to protection of the environment. Recognizing that global environmental protection is a world issue, Icom Inc. decided to implement on-going environment protection activities throughout its business environment. Icom Inc. focuses on saving energy, saving resources, and reducing waste.



ISO 14001 certification is the latest ISO standard Icom Inc. has met. Earlier, Icom Inc. gained ISO 9001 certification in 1998, and its factory Wakayama Icom Inc. in Wakayama, Japan obtained ISO 9001 certification in 1997.

# Green Procurement Standard

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Icom Inc. had introduced the Green Procurement Standard as stated below, and has progressively implemented it in Icom products.

## Introduction

At Icom Inc., we have been deeply concerned about “global environmental conservation” as a critical long-term issue for all mankind, in every phase of our business activities, we have promoted environment-conscious activities.

The Icom Inc. Green Procurement Standard has been developed as a set of guidelines for procurement activities from the viewpoint of a socially responsible company in favor of global environmental conservation.

In pursuit of producing eco-friendly Icom products, procurement of less environmentally hazardous raw materials and parts for the products plays a significant role, and understanding and cooperation of all our valued suppliers in this matter is essential to promote our green procurement activities.

We hereby request that each of our valued suppliers understand the recent social trend toward global environmental protection, work towards environmental sustainability, and promote environmental improvement jointly through adherence to this standard.

## 1. Purpose

The Icom Inc. Green Procurement Standard has been developed at Icom Inc. to clearly specify substances for which the use in Icom products is restricted or discarded in promoting green procurement activities with the aim of adhering to pertinent laws and regulations and reducing environmental impacts.

## 2. Scope

This standard applies to substances contained in products, their raw materials and parts manufactured or used at Icom and its suppliers.

For more information on the Icom Inc. Green Procurement Standard, please visit

[http://www.icom.co.jp/world/company\\_profile/green/index.html](http://www.icom.co.jp/world/company_profile/green/index.html)

Icom Inc. is a member of Japan Green Procurement Survey Standardization Initiative (JGPSSI)\*1. At Icom, we conduct a green procurement survey based on the "Guidelines for the Management of Chemical Substances in Products," which has been developed by JGPSSI.



"Icom Restricted Environmentally Hazardous Chemical Substances List" has been developed based on the "Substance/Chemical Category" established by JIG\*2. In some cases, only particular subsets of substances in the "Substance/Chemical Category" are regulated. Please refer to "Annex E" of "JIG-101A" for details.

\*1 Japan Green Procurement Survey Standardization Initiative (JGPSSI) is a council whose objective is to reduce the labor involved in conducting green procurement surveys and improve the quality of the responses received, by standardizing the list of substances targeted by the surveys based on Joint Industry Guide (JIG) and the format for responses.

\*2 Joint Industry Guide (JIG) is a set of guidelines concerning disclosure of chemical substances contained in electronic products, which has been developed jointly by JGPSSI, EIA and EICTA, and then issued under the approval of JGPSSI and EIA.

For more information on JGPSSI and JIG, please visit [JGPSSI website \(http://www.jgpssi.jp/\)](http://www.jgpssi.jp/).



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**Count on us!**