

NFPA®

1802

Standard on Two-Way, Portable
RF Voice Communications Devices
for Use by Emergency Services
Personnel in the Hazard Zone

2021



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NFPA® 1802

Standard on

Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone

2021 Edition

This edition of NFPA 1802, *Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone*, was prepared by the Technical Committee on Electronic Safety Equipment and released by the Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment. It was issued by the Standards Council on October 5, 2020, with an effective date of October 25, 2020.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See “Codes & Standards” at www.nfpa.org for more information.

This edition of NFPA 1802 was approved as an American National Standard on October 25, 2020.

Origin and Development of NFPA 1802

On June 2, 2011, Lieutenant Vincent Perez and Firefighter/Paramedic Anthony Valerio of the San Francisco Fire Department (SFFD) were killed in the line of duty as a result of injuries sustained while operating at Box 8155, 133 Berkeley Way. An internal SFFD Safety Investigation Report released in February 2012 found “a very troubling matter” with regard to the equipment used by Lieutenant Perez and Firefighter/Paramedic Valerio — their portable radios and, specifically, their remote speaker mics (RSM) failed from exposure to heat from the fire.

As a result of this investigation, in November 2011 the SFFD Fire Chief and the International Association of Firefighters (IAFF) requested that NFPA consider the development of a new standard on the design, performance, testing, and certification of two-way, portable (handheld) land mobile radios (LMR) for use by emergency services personnel.

The National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program report F2011-13, released March 1, 2012, of the same SFFD fire, revealed similar issues regarding the members’ portable radios. That report produced “Recommendation #9: First responder radio manufacturers, research/design facilities and standard setting bodies should continue research and efforts to improve radio system capabilities.” Further review of other NIOSH Firefighter Fatality Investigations found portable radio deficiencies nationwide, including in California, North Carolina, South Carolina, and Virginia.

On March 23, 2012, at the request of the SFFD and IAFF, the NFPA Standards Council published a notice to solicit public comments on the need for the LMR standard and to identify subject matter resources, those interested in participating, if established, and other organizations actively involved with the subject. Of 40 public comments received, only three were not in favor of the development of an LMR standard.

Scientific research conducted by the National Institute for Standards and Technology (NIST), and published August 2006 in NIST Technical Note 1477, tested portable radios in simulated firefighting environments and determined that radios are vulnerable when exposed to elevated temperatures. The report also stated that failure of the external speaker/microphone, the part most likely to be exposed to extreme conditions, could mean complete loss of radio operation. The report concluded that because firefighter personal protective clothing (FF PPE) is designed to Thermal Class III, LMRs and accessories such as RSM should also be designed to withstand the fire environment. Finally, the NIST report recommended working with NFPA “to develop a radio standard that would include requirements for the thermal testing of handheld radios.”

On September 10, 2012, the NFPA Standards Council approved the request and assigned the development of the LMR standard to the Electronic Safety Equipment Technical Committee (TC)

and directed the TC to review its membership to ensure that it had appropriate expertise in the design, performance, testing, and certification of LMRs.

NFPA Standards Council also provided direction regarding the document scope. The purpose of this standard would also include establishing minimum requirements for the proper function of the electronics embedded in or associated with emergency services electronic safety equipment when exposed to hostile thermal, immediately dangerous to life and health (IDLH) environments and nonhostile emergency scene environments. The standard was not intended to cover interoperability and was limited to the performance of the LMR in the firefighting environment.

The initial pre-first draft meeting convened on March 19, 2013, with the Electronic Safety Equipment Technical Committee led by newly appointed chairman, Robert Athanas. Due to recruitment and interest in the project, attendance exceeded expectations. Present were representatives from several public safety and military LMR and component manufacturers and agencies such as the Association of Public Safety Communications (APCO), Telecommunications Industry Association (TIA), the Federal Communications Commission (FCC), as well as LMR testing and intrinsic safety certification organizations.

Of concern to the committee was the effect the new standard would have on an industry already well-established and regulated, with millions of products in use. Of concern to the industry was the effect the new standard would have on manufacturers and the industry as a whole.

The intent of the meeting was to affirm the scope of the proposed document, define what the standard would and would not cover, and identify issues that required further research. It was determined that the proposed standard would cover the device itself and not the operating system it might use to support communications. There were many presentations, including an overview of LMRs as they currently exist, radio regulations, intrinsic safety, issues related to firefighter fatalities, existing tests and methods, other concerns related to testing, and current NFPA standards that touch on radios.

Consideration was also given to next-generation broadband and mission critical voice devices (FirstNet) that might be in use by the time this new standard is completed. With this in mind, the committee agreed that the standard should allow for future portable RF voice communication device (RF device) and RSM development and certification.

Research information and recommendations from the Department of Homeland Security (DHS), International Association of Fire Chiefs (IAFC), National Public Safety Telecommunications Council (NPSTC), IAFF, NIST, and NIOSH were also reviewed.

Fire service participants agreed that the RF device and RSM are life safety devices and should be functional and able to transmit and receive when exposed to the harsh firefighting environment. Today, ideally, all members operating in the hazard zone are equipped with an RF device that enables them to transmit and receive vital information, including — most importantly — a MAYDAY.

Initially, three task groups (TG) were formed, all led by representatives from the fire service:

- (1) Physical Properties TG — responsible for the RF devices physical design, including the placement and size of knobs, buttons, displays, and switches.
- (2) Environmental TG — responsible for the environment the RF devices might be subject to and the relevant testing to ensure functionality. Existing NFPA and TIA tests should be reviewed.
- (3) Feature Set TG — responsible for the programmable features and settings of radios, including but not limited to which buttons and switches perform dedicated functions such as the on-off switch, emergency button, audio output, and so forth.

The TC made the following determinations:

- (1) RSMs would be considered part of the RF device and that the RSM and the RF device would be tested together when made by the same manufacturer.
- (2) RSMs could be tested and certified compliant as stand-alone devices. This would allow the end user the option of combining certified devices, both RF devices and RSMs. Further, those devices would remain certified when connected to any other device certified to the standard.
- (3) The primary purpose of the RF device and RSM was to transmit and receive despite exposure to the harsh firefighting environment. Therefore, an industry acceptable test or “speech quality test” would be required initially as a baseline and again after each subsequent test, achieving at least the baseline quality to ensure continued performance of both the RF device and the RSM.

As the committee continued its work, the need to develop the standard was emphasized again when fires in Houston, Texas, on May 31, 2013; Boston, Massachusetts, on March 26, 2014; and New York City on July 5, 2014, killed a total of eight firefighters. The Internal Line of Duty Death Reports conducted by these fire departments determined that, although not the cause of the fatalities, issues with portable radios and RSMs were cited as issues that needed to be addressed.

Over time, many other relevant features and tests were discussed, accepted, or rejected by the committee. In 2013, during the early stages of the development of this standard, the very knowledgeable RF device manufacturers and their affiliates were skeptical and concerned — at that time, no RF device complied with the requirements being proposed. Seven years later, as the

first edition of NFPA 1802, *Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone*, enters its final phase of development, all Electronic Safety Equipment Technical Committee members and all those who participated in the development of NFPA 1802 should be commended for coming together and working as one. Their combined knowledge, expertise, and resources resulted in a standard that will provide RF devices and RSMs that better suit the needs of users.

In addition to the names printed in the front of this standard and the numerous manufacturer representatives and SMEs who have participated in its development, there are five other people who deserve to be recognized for their contributions to the technical committee during the process to create the first edition of NFPA 1802:

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- (2) Kate A. Remley and her staff, National Institute of Standards & Technology (NIST);
- (3) Gordon R. Sletmoe, Lebanon Fire District, OR;
- (4) Jose L. Velo, San Francisco Fire Department, CA;
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2021 Edition

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced and extracted publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration

1.1 Scope. This standard shall identify the operating environment parameters, as well as the minimum requirements for the design, performance, testing, and certification of portable RF voice communications devices (RF devices) and remote speaker microphones (RSMs) for use by emergency services personnel (ESP) within the hazard zone during emergency incident operations without compromising compatibility with field emergency services communications networks.

1.1.1* This standard shall specify requirements for RF devices and RSMs used by ESP in the hazard zone as the primary voice communications link.

1.1.2 Certification.

1.1.2.1 RF devices and RSMs shall be permitted to be certified individually or as a combination of an RF device and an RSM.

1.1.2.2 Certified RF devices and RSMs shall remain certified when connected to any other RSMs certified to this standard.

1.1.3 Except where referenced by this standard, requirements of other standards shall not apply.

1.1.4 Any accessories or enhancements built into, attached to, or sold with an RF device or RSM shall be tested with those accessories and enhancements installed or attached to the RF device or RSM, as specified in Table 4.3.9, to ensure the performance and functions of the RF device or RSM.

1.1.5 Safety.

1.1.5.1 This standard shall not be construed as addressing all of the safety concerns, if any, associated with the use of this standard by testing facilities.

1.1.5.2 It shall be the responsibility of the persons and organizations that use this standard to establish safety and health practices and to determine the applicability of regulatory limitations prior to use of this standard for designing, manufacturing, and testing.

1.1.6 Nothing herein shall restrict any jurisdiction or manufacturer from exceeding these minimum requirements.

1.2 Purpose.

1.2.1 The purpose of this standard shall be to establish minimum requirements for RF devices and RSMs manufactured for emergency services use in the hazard zone.

1.2.2 Controlled laboratory tests used to determine compliance with the performance requirements of this standard shall not be deemed as establishing performance levels for all situations, environments, and conditions to which RF devices and RSMs could be exposed.

1.2.3 This standard shall not be interpreted or used as a detailed manufacturing or purchase specification, but it shall be permitted to be referenced in purchase specifications as minimum requirements.

1.3 Application.

1.3.1* This standard shall apply to all RF devices and RSMs for use by ESP in the hazard zone.

1.3.2 This standard shall also apply to RSMs not supplied with an RF device.

1.3.3 This standard shall apply to the design, performance, manufacturing, testing, and certification of new equipment for use by ESP.

1.3.4 Reserved.

1.3.5* This standard shall not apply to compatible devices and accessories that could be built into or attached to a certified RF device or RSM before or after purchase, but that are not necessary for the RF device or RSM to meet the requirements of this standard.

1.3.6* This standard shall not apply to criteria for use of an RF device or RSM by ESP in the hazard zone.

1.4 Units.

1.4.1 In this standard, values for measurement are followed by an equivalent in parentheses, but only the first stated value shall be regarded as the requirement.

1.4.2 Equivalent values in parentheses shall not be considered as the requirement because those values are approximate.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2019 edition.

NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2018 edition.

2.3 Other Publications.

2.3.1 APCO Publications. APCO International, 351 N. Williamson Blvd., Daytona Beach, FL 32114-1112.

P25, *Standard of Requirements (P25 SoR)*, 2005.

2.3.2 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM B117, *Standard Practice for Operating Salt Spray (Fog) Apparatus*, 2011.

ASTM D1003, *Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics*, 2013.

2.3.3 ISO/IEC Publications. International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO Guide 27, *Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity*, 1983.

ISO 9001, *Quality management systems — Requirements*, 2008.

ISO 9001, *Quality management systems — Requirements*, 2015.

ISO 17493, *Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air circulating oven*, 2000.

ISO/IEC 17011, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies*, 2004.

ISO/IEC 17021-1, *Conformity assessment — Requirements for bodies providing audit and certification of management systems*, 2015.

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*, 2005, Technical Corrigendum 1, 2006.

ISO/IEC 17065, *Conformity assessment — Requirements for bodies certifying products, processes and services*, 2012.

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*, Ed 2.2b, 2013.

2.3.4 ITU Publications. International Telecommunication Union (ITU), Place des Nations, 1211 Geneva 20, Switzerland.

ITU-T P.863, *Perceptual Objective Listening Quality Assessment*, 2018.

2.3.5 TIA Publications. Telecommunications Industry Association, 1320 North Courthouse Road, Suite 200, Arlington, VA 22201.

TIA-102.AABD, *Project 25 Trunking Procedures*, 2014.

TIA-102.CAAA-E, *Project 25 Digital C4FM/CQPSK Transceiver Measurement Methods*, 2016.

TIA-102.CAAB-E, *Land Mobile Radio Transceiver Performance Recommendations, Digital Radio Technology, C4FM/CQPSK Modulation*, 2019.

TIA-603-E, *Land Mobile FM or PM — Communications Equipment — Measurement and Performance Standards*, 2016.

ANSI/TIA-4950-A, *Requirements for Battery-Powered, Portable Land Mobile Radio Applications in Class I, II, and III, Division 1, Hazardous (Classified) Locations*, 2014.

TIA-5045, *Numeric Identifier for Conventional Analog Operation*, 2017.

2.3.6 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.

UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III, Division 1, Hazardous (Classified) Locations*, 6th edition, 2002.

UL 121201, *Non-Incendive Electric Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations*, 2017.

2.3.7 USB Publications. Universal Serial Bus, USB Implementers Forum, 3855 SW 153rd Drive Beaverton, OR 97003, <http://www.usb.org/home>.

Universal Serial Bus Specification Revision 2.0, April 27, 2000.

2.3.8 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections. (Reserved)

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction

and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.5 Shall. Indicates a mandatory requirement.

3.2.6 Should. Indicates a recommendation or that which is advised but not required.

3.2.7 Standard. An NFPA standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Acceptable. Considered by the authority having jurisdiction (AHJ) as adequate for satisfying goals, performance objectives, or performance criteria.

3.3.2 Accessory. An item, or items, that could be attached to a certified product, but are not necessary for the certified product to meet the requirements of this standard.

3.3.3 Alarm Signal. An audible warning that is identifiable as an indication that an emergency services person (ESP) is in need of assistance.

3.3.4 Alias. A unique sequence of alphanumeric characters, specifically identifying an RF device assigned by the AHJ.

3.3.5* Bluetooth. A wireless technology that allows data communications between devices over short ranges.

3.3.6 Certification Organization. An independent third-party organization that determines product compliance with the requirements of this standard using product testing and evaluation and that administers a labeling, listing, and follow-up program.

3.3.7 Certification/Certified. A system whereby a certification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of this standard, authorizes the manufacturer to use a label on listed products that comply with the requirements of this standard, and establishes a follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine continued compliance of

labeled and listed products with the requirements of this standard.

3.3.8 Channel. An assigned operation range of frequencies; or a user-selectable frequency pair used for radio communications.

3.3.9* Compatible Device. Any electronic device that connects to the RF device or RSM and that participates in the exchange of a signal.

3.3.10 Compliance/Compliant. Meeting or exceeding all applicable requirements of this standard.

3.3.11 Compliant Product. Equipment that is certified to the applicable NFPA standard.

3.3.12 Component. Any material, part, or subassembly used in the construction of the compliant product.

3.3.13 Drip. To run or fall in drops or blobs.

3.3.14 EAB. See 3.3.15.

3.3.15 Emergency Alert Button (EAB). Electronic device button to assist in alerting of an emergency.

3.3.16 Emergency ID. Unit identification of a radio in an emergency state.

3.3.17 Emergency State/Mode. State of an RF device after a user has declared an emergency condition, usually characterized by a particular set of behaviors, displays, or audible alerts.

3.3.18 Failure Mode and Effects Analysis (FMEA). A risk assessment technique for systematically identifying potential failures in a system or a process.

3.3.19 FMEA. See 3.3.18.

3.3.20 Follow-Up Inspection Program. The sampling, inspections, tests, or other measures conducted by the certification organization on a periodic basis to determine the continued compliance of labeled and listed products that are being produced by the manufacturer to the requirements of this standard.

3.3.21 HATS. See 3.3.26.

3.3.22 Hazard Zone. The area where members might be exposed to a hazard or hazardous atmosphere; or a particular substance, device, event, circumstance, or condition that presents a danger to members of the fire department.

3.3.23* Hazard Zone Mode. A mode of operation of the device when in the hazard zone.

3.3.24 Hazardous (Classified) Location (HazLoc). A location where fire or explosion hazards might exist due to flammable gases, flammable liquid-produced vapors, combustible liquid-produced vapors, combustible dusts, or ignitable fibers/flyings.

3.3.25 HazLoc. See 3.3.24.

3.3.26 Head and Torso Simulator (HATS). A mannequin with built-in ear and mouth simulators that provides a realistic reproduction of the acoustic properties of an average adult human head and torso.

3.3.27 Icon. A symbol that represents an option, program, or system status.

3.3.28 Interoperability. The capability of components to exchange data or information, or mechanically interface, with other components.

3.3.29* Intrinsic Safety (IS). Type of protection where any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions.

3.3.30 Intrinsically Safe Circuit. A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under prescribed test conditions.

3.3.31 Intrinsically Safe System. An assembly of interconnected intrinsically safe apparatus, associated apparatus, and interconnecting cables, in that those parts of the system that are used in hazardous (i.e., classified) locations are intrinsically safe circuits.

3.3.32 IS. See 3.3.29.

3.3.33 Logical ID. A unique sequence of numeric characters identifying an RF device.

3.3.34 Manufacturer. The entity that directs and controls any of the following: compliant product design, compliant product manufacturing, or compliant product quality assurance; or the entity that assumes liability for the compliant product or provides the warranty for the compliant product.

3.3.35 Melt. A response to heat by a material resulting in evidence of flowing or dripping.

3.3.36* Mode. A means of categorizing a collection of features used in a specific operational situation.

3.3.37 Model. The collective term used to identify a group of individual elements or items of the same basic design and components from a single manufacturer produced by the same manufacturing and quality assurance procedures that are covered by the same certification.

3.3.38* Nonhazard Zone Mode. A mode of operation of the device, as defined by the AHJ, which has different operational features than the hazard zone mode of operation.

3.3.39 Nonincendive Equipment. Equipment having electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas-air, vapor-air, or dust-air mixture due to arcing or thermal means.

3.3.40* Out-of-Range. A condition when the communication between a system and an RF device is lost.

3.3.41 Perceptual Objective Listening Quality Assessment (POLQA). An objective test process for speech quality on telecommunications equipment that can be automated.

3.3.42 Pink Noise. Noise that contains constant energy per octave band.

3.3.43 POLQA. See 3.3.41.

3.3.44 Portable Radio. A two-way, portable voice communications device using radio frequencies that is either carried by an individual or worn on the body (see 3.3.50, *RF Device*).

3.3.45 Product. See 3.3.11, Compliant Product.

3.3.46* Product Label. A marking provided by the manufacturer for each compliant product containing compliance statements, certification statements, manufacturer and model information, or similar data.

3.3.47 Programmable Features. A feature or function that can be enabled or disabled by configuring the RF device or RSM prior to operation.

3.3.48 Radio Licensing Authority. The government authority in a country that issues licenses for use of radio frequencies by authorized agencies and individuals.

3.3.49 Remote Speaker Device/Microphone (RSD/RSM). A device that places the RF device microphone and speaker remotely from the RF device and near the face of the user.

3.3.50* RF Device. A radio system capable of both transmitting and receiving a modulated radio-frequency (RF) signal that is then converted to an audio or data signal, or both; used to transmit and receive signals.

3.3.51 RSD/RSM. See 3.3.49.

3.3.52 Safety Alert. The procedure by which a manufacturer notifies users, the marketplace, and distributors of potential safety concerns regarding a product.

3.3.53 Sample. The ensemble, element, component, or composite that is conditioned for testing; or ensembles, elements, items, or components that are randomly selected from the manufacturer's production line, from the manufacturer's inventory, or from the open market.

3.3.54 Sensitivity. The degree of response of a receiver or instrument to an incoming signal or to a change in the incoming signal.

3.3.55 Service Life. The period for which a compliant product might be useful before retirement.

3.3.56 Sound Pressure Level (SPL). The local pressure deviation from the ambient (i.e., average or equilibrium) atmospheric pressure caused by a sound wave.

3.3.57 Specimen. Taken from samples, the conditioned ensemble, element, item, or component that is tested.

3.3.58 SPL. See 3.3.56.

3.3.59 Talk Path. The specific channel, consisting of transmitting and receiving radio frequencies, chosen for field users to communicate on.

3.3.60* Talkgroup. A communications channel in a trunked system or a P25, *Standard of Requirements (P25 SoR)*, conventional system.

3.3.61* Telecommunications Industry Association (TIA). The leading trade association representing the global information and communications technology industry through standards development, policy initiatives, business opportunities, market intelligence, and networking events.

3.3.62 TIA. See 3.3.61.

3.3.63* Trunking Signaling Block (TSBK). A form of signaling that uses P25 digital protocol for ID, emergency, and similar messages.

3.3.64 TSBK. See 3.3.63.

3.3.65 User ID. A unique sequence of numeric characters (i.e., a logical ID) or alphanumeric characters assigned to the RF device as determined by the AHJ.

3.3.66* Voltage Standing Wave Ratio (VSWR). A measure of how efficiently radio-frequency power is transmitted from a power source.

3.3.67 VSWR. See 3.3.66.

3.3.68* Zone. A geographically defined area where communications are transmitted and received; or a collection of channels, talkgroups, or talk paths.

Chapter 4 Certification

4.1 General.

4.1.1 For the process of certification of RF devices and RSMs as being compliant with this standard, all RF devices and RSMs shall meet the requirements of Sections 4.1 through 4.8.

4.1.2 Certification and Accreditation.

4.1.2.1 All certification shall be performed by a certification organization that meets the requirements specified in Section 4.2 and that is accredited in accordance with ISO/IEC 17065, *Conformity assessment — Requirements for bodies certifying products, processes and services*.

4.1.2.2 The accreditation shall be issued by an accreditation body operating in accordance with ISO/IEC 17011, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.1.3 Manufacturers shall not claim compliance with portions or segments of the requirements of this standard and shall not use the NFPA name or the name or identification of this standard in any statements about their respective product(s) unless the product(s) is certified as compliant with all applicable requirements of this standard.

4.1.4 Where RF devices or RSMs are compliant, the product shall be labeled and listed.

4.1.5 Where RF devices or RSMs are compliant, the product shall also have a product label that meets the requirements specified in Section 5.1.

4.1.6 The certification organization's label, symbol, or identifying mark shall be one of the following:

- (1) Attached to the product label
- (2) Part of the product label
- (3) Immediately adjacent to the product label

4.2 Certification Program.

4.2.1 The certification organization shall not be owned or controlled by the manufacturers or vendors of the product being certified.

4.2.2 The certification organization shall be primarily engaged in certification work and shall not have a monetary interest in the product's ultimate profitability.

4.2.3 Accreditation.

4.2.3.1 The certification organization shall be accredited in accordance with ISO/IEC 17065, *Conformity assessment — Requirements for bodies certifying products, processes and services*.

4.2.3.2 The accreditation shall be issued by an accreditation body operating in accordance with ISO/IEC 17011, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.2.4 The certification organization shall refuse to certify products to this standard that do not comply with all applicable requirements of this standard.

4.2.5 The contractual provisions between the certification organization and the manufacturer shall specify that certification is contingent on compliance with all applicable requirements of this standard.

4.2.5.1 The certification organization shall not offer or confer any conditional, temporary, or partial certifications.

4.2.5.2 Manufacturers shall not be authorized to use any label or reference to the certification organization on products that are not compliant with all applicable requirements of this standard.

4.2.6 The certification organization shall have laboratory facilities and equipment available for conducting required tests to determine product compliance.

4.2.6.1 The certification organization laboratory facilities shall have a program in place and functioning for calibration of all instruments, and procedures shall be in use to ensure accurate control of all testing.

4.2.6.2 The certification organization laboratory facilities shall follow best practices regarding the use of laboratory manuals, form data sheets, documented calibration and calibration routines, performance verification, proficiency testing, and staff qualification and training programs.

4.2.7 The certification organization shall require the manufacturer to establish and maintain a quality assurance program that meets the requirements of Section 4.5.

4.2.7.1 The certification organization shall require the manufacturer to have a product recall system as specified in Section 4.8 as part of the manufacturers' quality assurance program.

4.2.7.2 The certification organization shall audit the manufacturer's quality assurance program to ensure that the quality assurance program provides continued product compliance with this standard.

4.2.8 The certification organization and the manufacturer shall evaluate any changes affecting the form, fit, or function of the compliant product to determine its continued certification to this standard.

4.2.9 The certification organization shall have a follow-up inspection program of the manufacturer's facilities of the compliant product with at least two random and unannounced visits per 12-month period to verify the product's continued compliance.

4.2.9.1 As part of the follow-up inspection program, the certification organization shall select samples of the compliant product at random from the manufacturer's production line, from the manufacturer's in-house stock, or from the open market.

4.2.9.2 Samples shall be evaluated by the certification organization to verify the product's continued compliance to ensure that the materials, components, and manufacturing quality

assurance systems are consistent with the materials, components, and manufacturing quality assurance that were inspected and tested by the certification organization during initial certification and recertification.

4.2.9.3 The certification organization shall be permitted to conduct specific testing to verify the product's continued compliance.

4.2.9.4 For products, components, and materials where prior testing, judgment, and experience of the certification organization have shown results to be in jeopardy of not complying with this standard, the certification organization shall conduct more frequent testing of sample product, components, and materials acquired in accordance with 4.2.9.1 against the applicable requirements of this standard.

4.2.10 The certification organization shall have in place a series of procedures, as specified in Section 4.6, that address reports of situations in which a compliant product is subsequently found to be hazardous.

4.2.11 Appeals.

4.2.11.1 The certification organization's operating procedures shall provide a mechanism for the manufacturer to appeal decisions.

4.2.11.2 The procedures shall include the presentation of information from both sides of a controversy to a designated appeals panel.

4.2.12 Name and Label Protection.

4.2.12.1 The certification organization shall be in a position to use legal means to protect the integrity of its name and label.

4.2.12.2 The name and label shall be registered and legally defended.

4.3 Inspection and Testing.

4.3.1 For both initial certification and recertification of compliant products, the certification organization shall conduct both inspection and testing as specified in Section 4.3.

4.3.2 All inspections, evaluations, conditioning, and testing for certification or for recertification shall be conducted by a certification organization's testing laboratory that is accredited in accordance with the requirements of ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*.

4.3.2.1 The certification organization's testing laboratory's scope of accreditation to ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*, shall encompass testing of RF devices.

4.3.2.2 The accreditation of a certification organization's testing laboratory shall be issued by an accreditation body operating in accordance with ISO/IEC 17011, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.3.3 A certification organization shall be permitted to utilize conditioning and testing results conducted by a product or component manufacturer for certification or recertification, provided the manufacturer's testing laboratory meets the requirements specified in 4.3.3.1 through 4.3.3.5.

4.3.3.1 The manufacturer's testing laboratory shall be accredited in accordance with the requirements of ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*.

4.3.3.2 The manufacturer's testing laboratory's scope of accreditation to ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*, shall encompass testing of RF devices.

4.3.3.3 The accreditation of a manufacturer's testing laboratory shall be issued by an accreditation body operating in accordance with ISO/IEC 17011, *Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.3.3.4 The certification organization shall approve the manufacturer's testing laboratory.

4.3.3.5 The certification organization shall determine the level of supervision and witnessing of the conditioning and testing for certification or recertification conducted at the manufacturer's testing laboratory.

4.3.4 Sampling levels for testing and inspection shall be established by the certification organization and the manufacturer to ensure that products certified to this standard are compliant, unless such sampling levels are specified herein.

4.3.5 Inspection and evaluation by the certification organization shall include a review of all product labels to ensure that all required label attachments, compliance statements, certification statements, and other product information are at least as specified for RF devices in Section 5.1.

4.3.6 Inspection and evaluation by the certification organization shall include an evaluation of any symbols and pictorial graphic representations used on product labels or in user information, as permitted in 5.1.5, to ensure that the symbols are explained in the product's user information package.

4.3.7 Inspection and evaluation by the certification organization shall include a review of the user information required by Section 5.2 to ensure that the information has been developed and is available.

4.3.8 Inspection and evaluation by the certification organization for determining compliance with the design requirements specified in Chapter 6 shall be performed on whole or complete products.

4.3.9 Testing to determine compliance of the RF device with the performance requirements specified in Chapter 7 shall be conducted by the certification organization in accordance with the specified testing requirements of Chapter 8 and in the order as specified in Table 4.3.9.

4.3.9.1 Testing to determine compliance of RSMs with the performance requirements specified in Chapter 7 that can be connected to the RF device shall be conducted by the certification organization in accordance with the specified testing requirements of Chapter 8 and in the order as specified in Table 4.3.9.1.

4.3.9.2 Testing shall be performed on new RF devices or RSMs.

4.3.9.3 Testing shall be performed on specimens representative of materials and components used in the actual construction of the compliant product.

Table 4.3.9 Order of Testing

Specimen 1–3	Specimen 4–6	Specimen 7–9	Specimen 10–12	Specimen 13–15	Specimen 16–18	Specimen 19–21	Components
Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Display Surface Abrasion Test (Section 8.7)
Heat and Flame Test (Section 8.9)	Power Source Performance Test (Section 8.18)	Impact Acceleration Resistance Test (Section 8.5)	Water Drainage Test (Section 8.13)	Case Integrity Test (Section 8.12)	TIA Transmit Power (Section 8.15)	Tumble Vibration Test (Section 8.14)	—
Speech Quality Test (Section 8.2)	Vibration Test (Section 8.4)	Cable Pullout Test (Section 8.11)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	TIA Carrier Frequency Stability (Section 8.16)	Speech Quality Test (Section 8.2)	—
Antenna VSWR Swept Frequency Test (Section 8.20)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Corrosion Test (Section 8.6)	High Temperature Functionality Test (Section 8.8) includes Speech Quality Test (Section 8.2)	TIA Receiver Sensitivity (Section 8.17)	Antenna VSWR Swept Frequency Test (Section 8.20)	—
—	—	Antenna VSWR Swept Frequency Test (Section 8.20)	Speech Quality Test (Section 8.2)	Product Label Durability Test (Section 8.10)	Electronic Temperature Stress Test (Section 8.19)	—	—
—	—	—	Product Label Durability Test (Section 8.10)	Antenna VSWR Swept Frequency Test (Section 8.20)	Heat and Immersion Leakage Resistance (Section 8.3)	—	—
—	—	—	Antenna VSWR Swept Frequency Test (Section 8.20)	—	Product Label Durability Test (Section 8.10)	—	—
—	—	—	—	—	Speech Quality Test (Section 8.2)	—	—
—	—	—	—	—	Antenna VSWR Swept Frequency Test (Section 8.20)	—	—

4.3.9.4 The certification organization also shall be permitted to use sample materials cut from a representative product.

4.3.9.5 Where any manufacturer-supplied accessories or enhancements are built into, attached to, or detachable from the RF devices or RSMs for use in the hazard zone, the certification organization shall do the following:

- (1) Inspect and evaluate the RF devices and RSMs as specified in Chapter 6
- (2) Test the RF devices and RSMs as specified in Chapter 8

4.3.9.6 The RF devices and RSMs shall meet all the performance requirements specified in Chapter 7 with those accessories and enhancements installed or attached to ensure that the performance and functions of the RF devices and RSMs are not reduced or otherwise negatively affected.

4.3.10 For evaluation and testing for certification purposes, the certification organization shall accept from the manufacturer only product or product components that are the same in

every respect as the actual final product or product component.

4.3.11 The certification organization shall not allow any modifications, pretreatment, conditioning, or other such special processes of the product or any product component prior to the product's submission for evaluation and testing by the certification organization.

4.3.12 The certification organization shall not allow the substitution, repair, or modification —other than as specifically permitted herein — of any product or any product component during testing.

4.3.13 The certification organization shall not allow test specimens that have been conditioned and tested for one method to be reconditioned and tested for another test method unless specifically permitted in the test method.

4.3.14 Certification of Changes.

4.3.14.1 Material changes in the form, fit, or function of a compliant product shall necessitate new inspection and testing

Table 4.3.9.1 Test Matrix Table

Specimen 1–3	Specimen 4–6	Specimen 7–9	Specimen 10–12	Specimen 13–15	Specimen 16–18	Specimen 19–21	Component
Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Display Surface Abrasion Test (Section 8.7)
Heat and Flame Test (Section 8.9)	Power Source Performance Test (Section 8.18)	Impact Acceleration Resistance Test (Section 8.5)	Water Drainage Test (Section 8.13)	Case Integrity Test (Section 8.12)	Electronic Temperature Stress Test (Section 8.19)	Tumble Vibration Test (Section 8.14)	—
Speech Quality Test (Section 8.2)	Vibration Test (Section 8.4)	Cable Pullout Test (Section 8.11)	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Heat and Immersion Leakage Resistance (Section 8.3)	Speech Quality Test (Section 8.2)	—
—	Speech Quality Test (Section 8.2)	Speech Quality Test (Section 8.2)	Corrosion Test (Section 8.6)	High Temperature Functionality Test (Section 8.8) includes Speech Quality Test (Section 8.2)	Product Label Durability Test (Section 8.10)	—	—
—	—	—	Speech Quality Test (Section 8.2)	Product Label Durability Test (Section 8.10)	Speech Quality Test (Section 8.2)	—	—
—	—	—	Product Label Durability Test (Section 8.10)	—	—	—	—

to verify compliance to all applicable requirements of this standard that the certification organization determines can be affected by such change.

4.3.14.2 This recertification shall be conducted before labeling the modified product as being compliant with this standard.

4.3.15 Certification Data.

4.3.15.1 The manufacturer shall maintain all design, performance, inspection, and test data from the certification organization used in the certification of the manufacturer's compliant product.

4.3.15.2 The manufacturer shall provide such data, upon request, to the purchaser or authority having jurisdiction (AHJ).

4.3.16 Accessory Certification.

4.3.16.1 Where an RF device submitted for certification to this standard is also submitted with an accessory or compatible device that is built into or attached to the RF device, or sold for later attachment to the RF device, and an NFPA standard exists for the product performance associated with the accessory or compatible device, the accessory or compatible device shall be certified to the standard associated with the accessory or compatible device.

4.3.16.2 In all cases, such accessories or compatible devices shall not degrade the performance of the RF device.

4.4 Annual Verification of Product Compliance.

4.4.1 Recertification.

4.4.1.1 All RF devices and RSMs that are certified as compliant with this standard shall undergo recertification on an annual basis.

4.4.1.2 This recertification shall include the following:

- (1) Inspection and evaluation to all design requirements as required by this standard on all manufacturer's models and components
- (2) Testing to all performance requirements as required by this standard on all manufacturer's models and components within the following protocols:
 - (a) Where a test method incorporates testing both before and after preconditioning and the test generates quantitative results, recertification testing shall be limited to the conditioning that yielded the worst-case test result during the initial certification for the model or component.
 - (b) Where a test method requires testing of three specimens, a minimum of one specimen shall be tested for annual recertification.
 - (c) Where a test method requires testing of five or more specimens, a minimum of two specimens shall be tested for annual recertification.

4.4.2 Samples of manufacturer's models and components for recertification acquired from the manufacturer or a component supplier during random and unannounced visits as part of the follow-up inspection program in accordance with 4.2.9 shall be permitted to be used toward annual recertification.

4.4.3 Certification Data.

4.4.3.1 The manufacturer shall maintain all design, performance inspections, and test data from the certification organization used in the recertification of manufacturer's models and components.

4.4.3.2 The manufacturer shall provide such data, upon request, to the purchaser or AHJ.

4.5 Manufacturers' Quality Assurance Program.

4.5.1 The manufacturer shall provide and operate a quality assurance program that meets the requirements of Section 4.5, including a product recall system as specified in 4.2.7.1 and Section 4.8.

4.5.2 The operation of the quality assurance program shall evaluate and test compliant product production to the requirements of this standard to ensure that production remains in compliance.

4.5.3 The manufacturer shall be registered to ISO 9001, *Quality management systems — Requirements*.

4.5.3.1 Registration to the requirements of ISO 9001, *Quality management systems — Requirements*, shall be conducted by a registrar that is accredited in accordance with ISO/IEC 17021-1, *Conformity assessment — Requirements for bodies providing audit and certification of management systems*.

4.5.3.2 The scope of the ISO registration shall include at least the design and manufacturing systems management for the product being certified.

4.5.3.3 The registrar shall affix the accreditation mark on the ISO registration certificate.

4.5.4 Any entity that meets the definition of *manufacturer* as specified in 3.3.34 and therefore is considered to be the "manufacturer," but does not manufacture or assemble the compliant product, shall meet the requirements specified in Section 4.5.

4.5.5 Where the manufacturer uses subcontractors in the construction or assembly of the compliant product, the locations and names of all subcontractor facilities shall be documented and provided to the manufacturer's ISO registrar and the certification organization.

4.6 Failure Mode and Effects Analysis (FMEA) for RF Devices and RSMs.

4.6.1* An FMEA shall be applied throughout the development process.

4.6.2 The FMEA shall do the following:

- (1) Address RF devices or RSMs
- (2) Identify and prioritize those critical failures that could have a serious effect on the safety and reliability of a device in the anticipated operating environments

4.6.3 Failure Mode.

4.6.3.1 The FMEA shall tabulate potential failure modes and their effects on the performance of an RF device or RSM.

4.6.3.2 The failure mode shall describe how the system might fail.

4.6.4* FMEA Use.

4.6.4.1 The device manufacturer shall use FMEA to address the reduction of risk of random and systematic failures of the RF device or RSM by using as low as reasonably practical (ALARP) region activities, as shown in Figure 4.6.4.1.

4.6.4.2 The device manufacturer shall include the risk priority number (RPN) corresponding to the upper limit of the ALARP region in the FMEA report.

4.6.5 ALARP Limits.

4.6.5.1 Where a device system RPN is above the upper limit of the ALARP region, as determined by the manufacturer, one or more of the practices specified in 4.6.5.2 shall be permitted.

4.6.5.2 Verification of the manufacturers' design and testing practices shall include documentation of at least temperature, vibration, and wetness exposure data; hours of operation; and management of change information.

4.6.6 The FMEA report shall be provided to the certification organization.

4.7 Hazards Involving Compliant Product.

4.7.1 Hazardous Product Reporting Procedure.

4.7.1.1 The certification organization shall establish procedures for where a compliant product is reported as hazardous.

4.7.1.2 These procedures shall comply with the provisions of ISO Guide 27, *Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity*, and as modified herein.

4.7.2 Where a report of a hazard involved with a compliant product is received by the certification organization, the validity of the report shall be investigated.

4.7.3 With respect to a compliant product, a hazard shall be a condition, or create a situation, that results in exposing life, limb, or property to a dangerous or imminently dangerous condition.

4.7.4 Where a specific hazard is identified, the determination of action for the certification organization and the manufacturer to undertake shall take into consideration the severity of the hazard and its consequences to the safety and health of users.

4.7.5 Where it is established that a hazard is involved with a compliant product, the certification organization shall determine the scope of the hazard, including products, model numbers, serial numbers, factory production facilities, production runs, and quantities involved.

4.7.6 The certification organization's investigation shall include, but not be limited to, the extent and scope of the

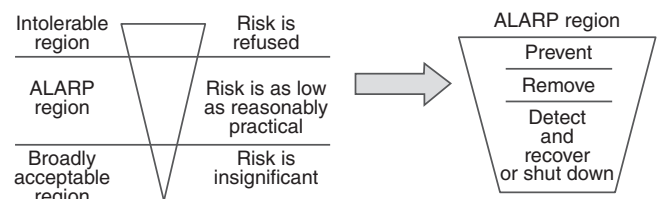


FIGURE 4.6.4.1 ALARP Region Activities.

problem as it might apply to other compliant product or compliant product components manufactured by other manufacturers or certified by other certification organizations.

4.7.7 The certification organization shall also investigate reports of a hazard where compliant product is gaining widespread use in applications not foreseen when the standard was written, such applications in turn being ones for which the product was not certified, and no specific scope of application has been provided in the standard, and no limiting scope of application was provided by the manufacturer in written material accompanying the compliant product at the point of sale.

4.7.8 The certification organization shall require the manufacturer of the compliant product or the manufacturer of the compliant product component, if applicable, to assist the certification organization in the investigation and to conduct its own investigation as specified in Section 4.8.

4.7.9 Where the facts indicating a need for corrective action are conclusive and the certification organization's appeal procedures referenced in 4.2.11 have been followed, the certification organization shall initiate corrective action immediately, provided there is a manufacturer to be held responsible for such action.

4.7.10 Where the facts are conclusive and corrective action is indicated, but there is no manufacturer to be held responsible, such as when the manufacturer is out of business or the manufacturer is bankrupt, the certification organization shall immediately notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.7.11 Where the facts are conclusive and corrective action is indicated, the certification organization shall take one or more of the following corrective actions:

- (1) Parties authorized and responsible for issuing a safety alert shall be notified when, in the opinion of the certification organization, such a safety alert is necessary to inform the users.
- (2) Parties authorized and responsible for issuing a product recall shall be notified when, in the opinion of the certification organization, such a recall is necessary to protect the users.
- (3) The mark of certification shall be removed from the product.
- (4) Where a hazardous condition exists and it is not practical to implement the corrective actions in 4.7.11(1), 4.7.11(2), or 4.7.11(3) or where the responsible parties refuse to take corrective action, the certification organization shall notify relevant governmental and regulatory agencies and issue a notice to the user community about the hazard.

4.7.12 The certification organization shall provide a report to the organization or individual identifying the reported hazardous condition and notify that organization or individual of the corrective action indicated or that no corrective action is indicated.

4.8 Manufacturers' Investigation of Complaints and Returns.

4.8.1 Manufacturers shall provide corrective action in accordance with ISO 9001, *Quality management systems — Requirements*, for investigating written complaints and returned products.

4.8.2 Manufacturers' records of returns and complaints related to safety issues shall be retained for at least 5 years.

4.8.3 Where the manufacturer discovers, during the review of specific returns or complaints, that a compliant product or compliant product component can constitute a potential safety risk to end users and is possibly subject to a safety alert or product recall, the manufacturer shall immediately contact the certification organization and provide all information about its review to assist the certification organization with the investigation.

4.9 Manufacturers' Safety Alert and Product Recall Systems.

4.9.1 Manufacturers shall establish a written safety alert system and a written product recall system that describes the procedures to be used in the event that they decide or are directed by the certification organization to either issue a safety alert or conduct a product recall.

4.9.2 The manufacturers' safety alert and product recall systems shall provide the following:

- (1) The establishment of a coordinator and responsibilities by the manufacturer for the handling of safety alerts and product recalls
- (2) A method of notifying all dealers, distributors, purchasers, users, and the NFPA about the safety alert or product recall that can be initiated within 1 week following the manufacturer's decision to issue a safety alert or to conduct a product recall or after the manufacturer has been directed by the certification organization to issue a safety alert or conduct a product recall
- (3) Techniques for communicating the nature of the safety alert or product recall and, in particular, the specific hazard or safety issue found to exist
- (4) Procedures for removing product that is recalled and for documenting the effectiveness of the product recall
- (5) A plan for repairing or replacing product or for compensating purchasers for returned product

Chapter 5 Product Labeling and Information

5.1 Product Label Requirements.

5.1.1 Every compliant RF device and RSM shall have a product label permanently attached to the complete assembled product.

5.1.2 Multiple label pieces shall be permitted to carry all statements and information required to be on the product label; however, all label pieces that the product label comprises shall be located adjacent to each other.

5.1.3 Labels and Lettering.

5.1.3.1 The certification organization's label, symbol, or identifying mark shall be attached to the product label or be part of the product label.

5.1.3.2 The label, symbol, or identifying mark shall be at least 6 mm ($\frac{1}{4}$ in.) in height.

5.1.3.3 All letters shall be at least 1.5 mm ($\frac{1}{32}$ in.) in height.

5.1.3.4 Arial font in capital letters shall be used for all label lettering.

5.1.4 All worded portions of the required product label shall be at least in English.