



MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230 • PHONE (410) 354-3300 • FAX (410) 354-3313
33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372
3162 BELICK STREET • SANTA CLARA, CALIFORNIA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372
13501 MCCALLEN PASS • AUSTIN, TEXAS 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

May 21, 2018

Intelligent Automation, Inc.
15400 Calhoun Place Suite 400
Rockville, MD 20855

Dear Eric van Doorn,

Enclosed is the EMC Wireless test report for compliance testing of the Intelligent Automation, Inc., ARGUS GUARDIAN as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), FCC Part 15 Subpart C for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Joel Huna
Documentation Department

Reference: (\\Intelligent Automation, Inc.\\EMC97200-FCC249)

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The Nation's First Licensed Nationally Recognized Testing Laboratory

Electromagnetic Compatibility Criteria Test Report

for the

Intelligent Automation, Inc.
ARGUS GUARDIAN

Verified under
the FCC Certification Rules
contained in
Title 47 of the CFR, Part 15.249 Subpart C
for Intentional Radiators

MET Report: EMC97200-FCC249

May 21, 2018

Prepared For:

Intelligent Automation, Inc.
15400 Calhoun Place Suite 400
Rockville, MD 20855

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco Ave.
Baltimore, MD 21230

**Electromagnetic Compatibility Criteria
Test Report**

for the

**Intelligent Automation, Inc.
ARGUS GUARDIAN**

Tested Under
the FCC Certification Rules
contained in
Title 47 of the CFR, Part 15.249 Subpart C
for Intentional Radiators



Donald Salguero, Project Engineer
Electromagnetic Compatibility Lab



Joel Huna
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rule Part 15.249 under normal use and maintenance.



John Mason, Director
Electromagnetic Compatibility Lab



Report Status Sheet

| Revision | Report Date | Reason for Revision |
|----------|--------------|---------------------|
| Ø | May 21, 2018 | Initial Issue. |

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List of Terms and Abbreviations

| | |
|--------------|---|
| AC | Alternating Current |
| ACF | Antenna Correction Factor |
| Cal | Calibration |
| <i>d</i> | Measurement Distance |
| dB | Decibels |
| dB μ A | Decibels above one microamp |
| dB μ V | Decibels above one microvolt |
| dB μ A/m | Decibels above one microamp per meter |
| dB μ V/m | Decibels above one microvolt per meter |
| DC | Direct Current |
| E | Electric Field |
| DSL | Digital Subscriber Line |
| ESD | Electrostatic Discharge |
| EUT | Equipment Under Test |
| <i>f</i> | Frequency |
| FCC | Federal Communications Commission |
| GRP | Ground Reference Plane |
| H | Magnetic Field |
| HCP | Horizontal Coupling Plane |
| Hz | Hertz |
| IEC | International Electrotechnical Commission |
| kHz | Kilohertz |
| kPa | Kilopascal |
| kV | Kilovolt |
| LISN | Line Impedance Stabilization Network |
| MHz | Megahertz |
| μ H | Microhenry |
| μ F | Microfarad |
| μ s | Microseconds |
| PRF | Pulse Repetition Frequency |
| RF | Radio Frequency |
| RMS | Root-Mean-Square |
| TWT | Traveling Wave Tube |
| V/m | Volts per meter |
| VCP | Vertical Coupling Plane |

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Intelligent Automation, Inc. ARGUS GUARDIAN, with the requirements of Part 15, §15.249. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the ARGUS GUARDIAN. Intelligent Automation, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the ARGUS GUARDIAN, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.249, in accordance with Intelligent Automation, Inc., purchase order number 3004-173011-002. All tests were conducted using measurement procedure ANSI C63.4-2014.

| FCC Reference | Description | Results |
|------------------------|-----------------------------------|----------------|
| §15.203 | Antenna Requirement | Compliant |
| §15.207 | AC Power Line Conducted Emissions | Not Applicable |
| §15.249 (a)(1) | Field Strength of Fundamental | Compliant |
| §15.249 | 20 dB Bandwidth | Compliant |
| §15.249(a)(d), §15.209 | Spurious Emissions | Compliant |
| §15.247(i) | Maximum Permissible Exposure | Compliant |

Table 1. Executive Summary of EMC Part 15.249 Compliance Testing

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by Intelligent Automation, Inc. to perform testing on the ARGUS GUARDIAN, under Intelligent Automation, Inc.'s purchase order number 3004-173011-002.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Intelligent Automation, Inc., ARGUS GUARDIAN.

The results obtained relate only to the item(s) tested.

| | | |
|---------------------------------------|---|------------------------|
| Model(s) Tested: | ARGUS GUARDIAN | |
| EUT Specifications: | Primary Power to Module: 2.1-3.6VDC | |
| | FCC ID: 2AI6Y-GUARDIAN | |
| | Equipment Code: | DXX |
| | Highest Fundamental Field Strength: | 88.08 dBuV/m (average) |
| | EUT Frequency Ranges: | 905-924.8MHz |
| Analysis: | The results obtained relate only to the item(s) tested. | |
| Environmental Test Conditions: | Temperature (15-35° C) | |
| | Relative Humidity (30-60%) | |
| | Barometric Pressure (860-1060 mbar) | |
| Evaluated by: | Donald Salguero | |
| Report Date(s): | May 21, 2018 | |

Table 2. EUT Specifications

B. References

| | |
|-----------------------------------|---|
| CFR 47, Part 15, Subpart C | Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies |
| ANSI C63.4:2014 | Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz |
| ISO/IEC 17025:2005 | General Requirements for the Competence of Testing and Calibration Laboratories |
| ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 914 W. Patapsco Ave., Baltimore, MD 21230. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Measurement Uncertainty

| Test Method | Typical Expanded Uncertainty | K | Confidence Level |
|---------------------------------------|------------------------------|---|------------------|
| RF Frequencies | ±4.52 Hz | 2 | 95% |
| RF Power Conducted Emissions | ±2.32 dB | 2 | 95% |
| RF Power Conducted Spurious Emissions | ±2.25 dB | 2 | 95% |
| RF Power Radiated Emissions | ±3.01 dB | 2 | 95% |

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

The ARGUS GUARDIAN, Equipment Under Test (EUT), is a system of fence-mounted sensors used for the purpose of perimeter intrusion detection, typically surrounding a building or other high valued asset needed protection. Each individual ARGUS GUARDIAN sensor is comprised of two radio transceivers – one 2.4GHz transceiver for the purpose of networking and communications, and one 900MHz transceiver for the purpose of sending/receiving the transmissions that are actually used to detect the intruders.

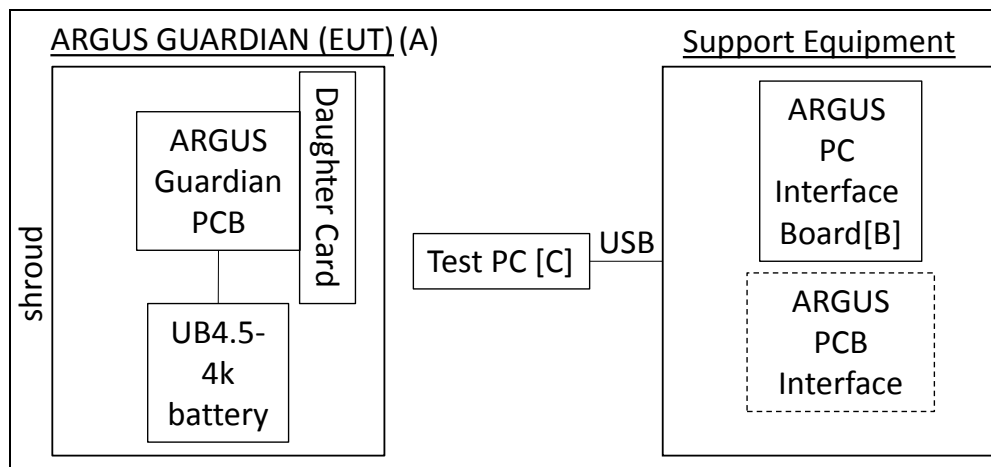


Figure 1. Block Diagram of EUT Configuration 1

F. Equipment Configuration

| Ref. ID | Slot # | Name / Description | Model Number | Part Number | Serial Number | Rev. # |
|---------|--------|--------------------|--------------|-------------|---------------|--------|
| A | | ARGUS GUARDIAN | | | | |

Table 5. Equipment Configuration

G. Support Equipment

| Ref. ID | Name / Description | Manufacturer | Model Number | *Customer Supplied Calibration Data |
|---------|-----------------------------------|------------------------------|-----------------|-------------------------------------|
| B | ARGUS Programming/Interface Board | Intelligent Automation, Inc. | IAI15001_DEV_X2 | Not Applicable |
| C | Test/Configuration PC | Panasonic | Toughbook CF-31 | Not Applicable |

The 'Customer Supplied Calibration Data' column will be marked as either not applicable, not available, or will contain the calibration date supplied by the customer.

Table 6. Support Equipment

H. Ports and Cabling Information

| Ref. ID | Port name on EUT | Cable Description or reason for no cable | Qty | Length as tested (m) | Max Length (m) | Shielded ? (Y/N) | Termination Box ID & Port Name |
|---------|------------------|--|-----|----------------------|----------------|------------------|--------------------------------|
| 1 | BAT | 2 conductor, 26 awg | 1 | 0.2 | | No | |

Table 7. Ports and Cabling Information

I. Mode of Operation

For testing purposes, we expect to operate either/both transceivers in a continuous modulation (CM) mode on a particular channel to represent a “worst-case” configuration for the device.

J. Monitoring Method

1. The EUT will blink its onboard LED green three times indicating that it has started up. After startup, no LED indication is present.
2. If directly connected to a PC USB port (via the separate configuration interface board), the EUT will print out statements indicating the test mode being used upon startup. This would be done only to confirm a configuration, but would not be used during actual testing.
3. The 2.4GHz and/or 900MHz transmissions can be observed on a spectrum analyzer.

K. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

L. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Intelligent Automation, Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: § 15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

- a.) Antenna must be permanently attached to the unit.
- b.) Antenna must use a unique type of connector to attach to the EUT.
- c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Test Results: The EUT as tested is compliant with the criteria of §15.203. EUT has a built-in antenna.

Test Engineer(s): Donald Salguero

Test Date(s): March 29, 2018

| Gain | Type |
|-------|-------------------|
| ~1dBi | Embedded monopole |

Table 8. Antenna List

Electromagnetic Compatibility Criteria for Intentional Radiators

§15.249(a) & (b)(1) Field Strength of Fundamental and Harmonics

Test Requirements: §15.249(a): Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of Harmonics (microvolts/meter) |
|-----------------------|--|--|
| 902-928 MHz | 50 | 500 |
| 2400-2483.5 MHz | 50 | 500 |
| 5725-5875 MHz | 50 | 500 |
| 24.0-24.25 GHz | 250 | 2500 |

(c) Field strength limits are specified at a distance of 3 meters.

Test Procedure: Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast with 1 m to 4 m height to determine worst case orientation for maximum emissions. The antenna was placed 3m away from the EUT. The EUT was rotated about all three orthogonal axis. Therefore the field strength limit is based on a 3m distance.

Test Results: The EUT is compliant with the requirements of § 15.249(a).

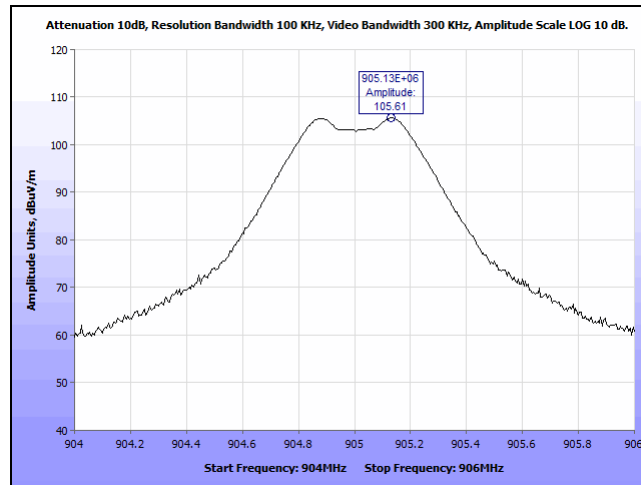
Test Engineer(s): Donald Salguero

Test Date(s): April 10, 2018

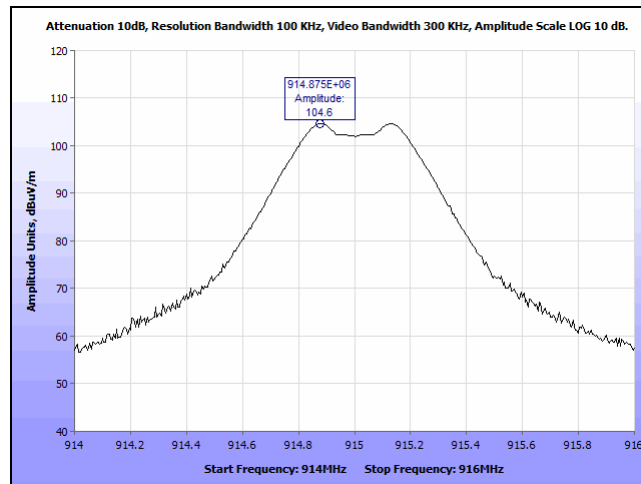
| Center Frequency (MHz) | Peak Field Strength (dBuV/m) | DCCF | Average Field Strength (dBuVm) | Limit (dBuV/m) | Margin |
|------------------------|------------------------------|------|--------------------------------|----------------|--------|
| 905 | 105.61 | -18 | 87.61 | 94 | -6.39 |
| 915 | 104.6 | -18 | 86.6 | 94 | -7.4 |
| 924.8 | 106.08 | -18 | 88.08 | 94 | -5.92 |

Table 9. Field Strength of Fundamental, Test Results

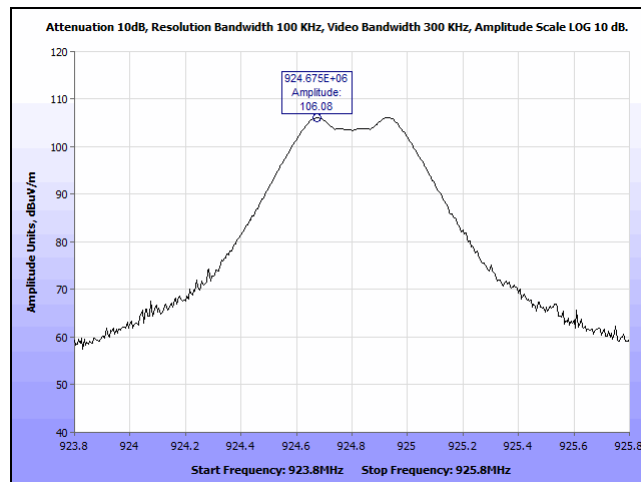
Field Strength of Fundamental



Plot 1. Radiated Field Strength of Fundamental, Ch. 0



Plot 2. Radiated Field Strength of Fundamental, Ch. 50



Plot 3. Radiated Field Strength of Fundamental, Ch. 99

Duty Cycle Calculation

| Frequency Band | Period mS | On Time mS | Duty Cycle |
|----------------|-----------|------------|------------|
| 902-928 MHz | 7.252 | 0.896 | -18.16 |

Table 10. Duty Cycle, Test Results

Note: Duty Cycle = On Time / Period
In dB = 20*log(Duty Cycle)

“The 900MHz transmissions are also packet-based, but are sent at a higher rate (13.79 Hz typically). These packets are sent using GFSK modulation at a bitrate of 250kbps, and are 28 bytes in length (0.896msec). Thus, the typical transmit duty cycle is 1.236%. The maximum possible transmit frequency is 137.9Hz, for a maximum possible transmit duty cycle of 12.36%.”

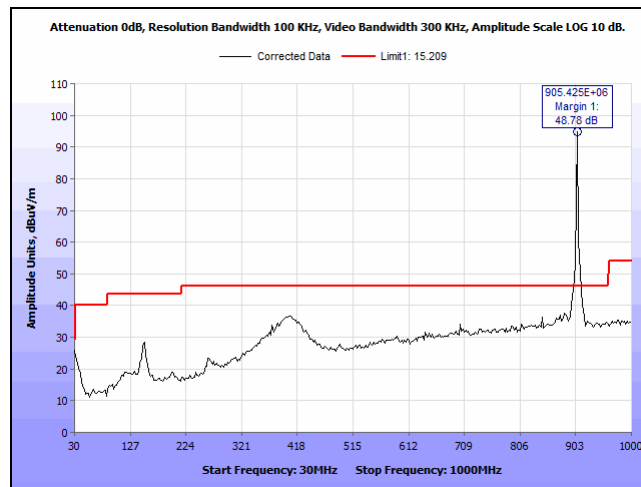
Excerpt from Operational Description

Electromagnetic Compatibility Criteria for Intentional Radiators

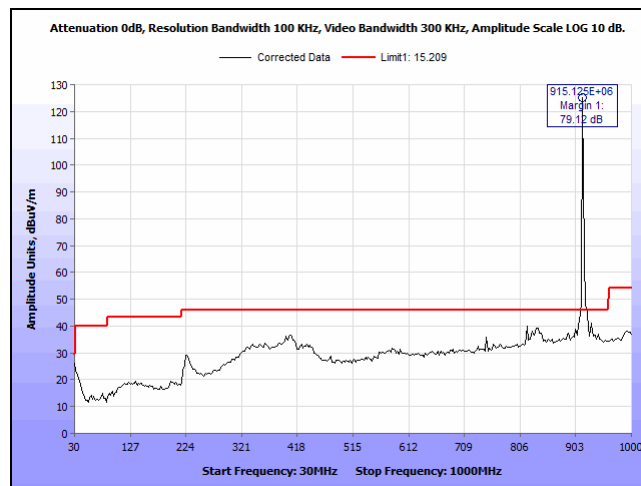
§ 15.249(a)(d) Spurious Emissions

- Test Requirements:** (a) Harmonics originating from devices that operate in the 900- 928 MHz band shall meet the 500 microvolts/meter limit (i.e.54 dB μ V/m) with an average detector.
- (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.
- Test Procedure:** Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast with 1 m to 4 m height to determine worst case orientation for maximum emissions. Emissions below 1 GHz were performed with the antenna placed 3m away from EUT. For above 1 GHz, the measuring antenna was placed 1m away and accounted for distance correction. Measurements were performed from 30MHz to 18GHz.
- Test Results:** The EUT is compliant with the harmonics and Spurious Emissions Requirements of §15.249(a)(d). Only noise floor was detected above 18GHz.
- Test Engineer(s):** Donald Salguero
- Test Date(s):** March 29, 2018

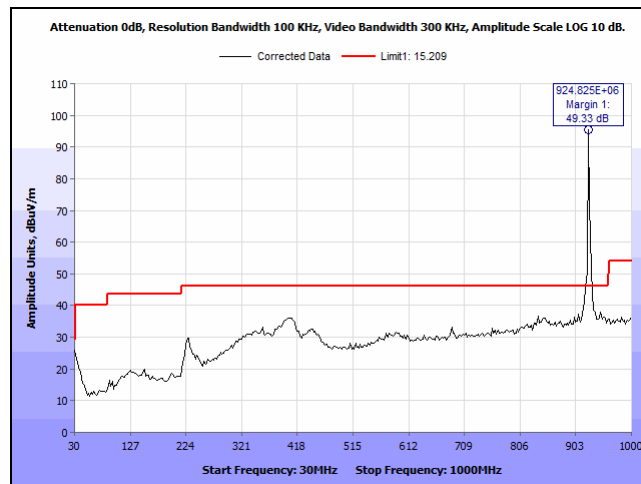
Radiated Spurious Emissions



Plot 4. Radiated Spurious Emissions, ch. 0, 30 – 1000 GHz



Plot 5. Radiated Spurious Emissions, ch. 50, 30 – 1000 GHz

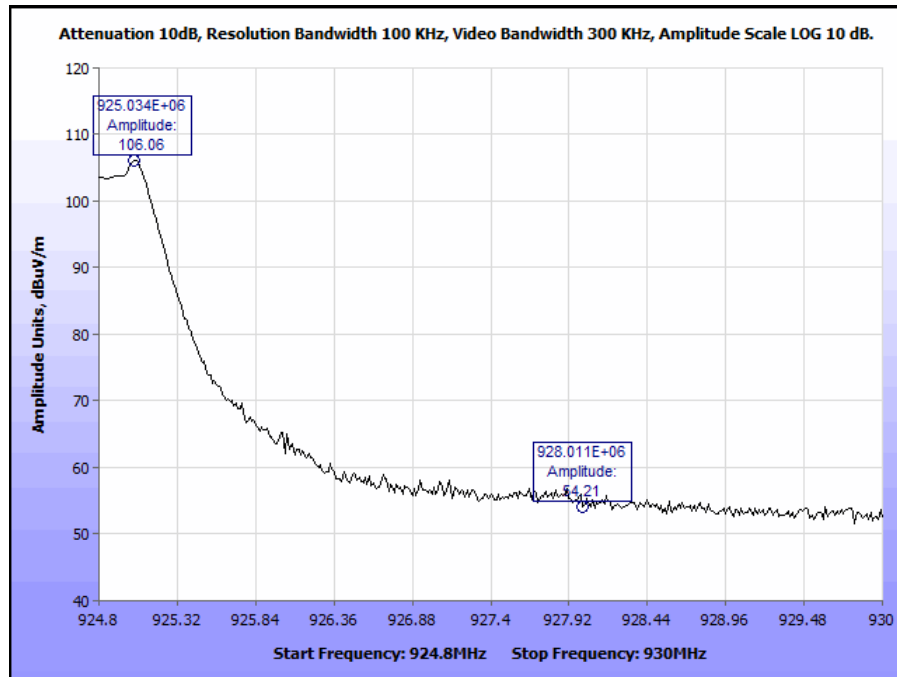


Plot 6. Radiated Spurious Emissions, ch. 99, 30 – 1000 GHz

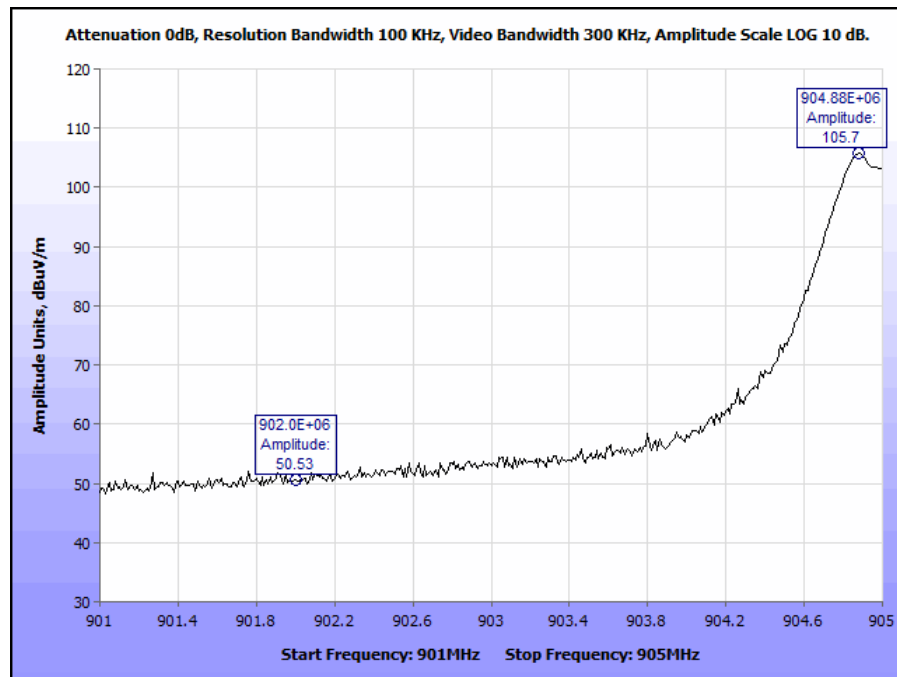
Radiated Band Edge

15.249(d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by 50dB below the level of the fundamental or to the general radiated emission limits of 15.209, whichever is the lesser attenuation.

Result: 15.249(d) 50dB below fundamental limit is compliant.

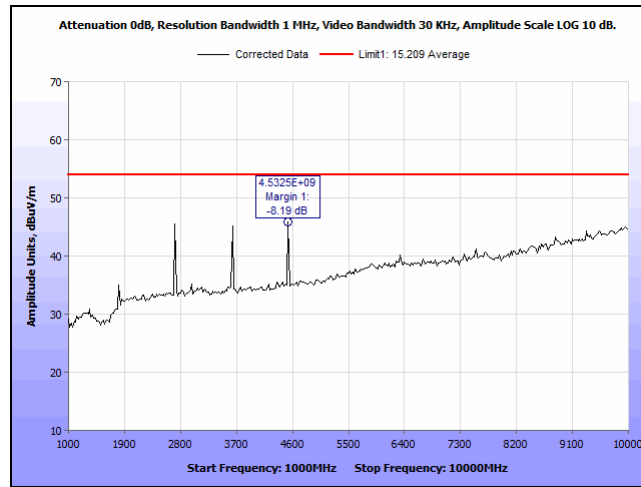


Plot 7. Radiated Band Edge, High Edge, 928 MHz, Ch. 99

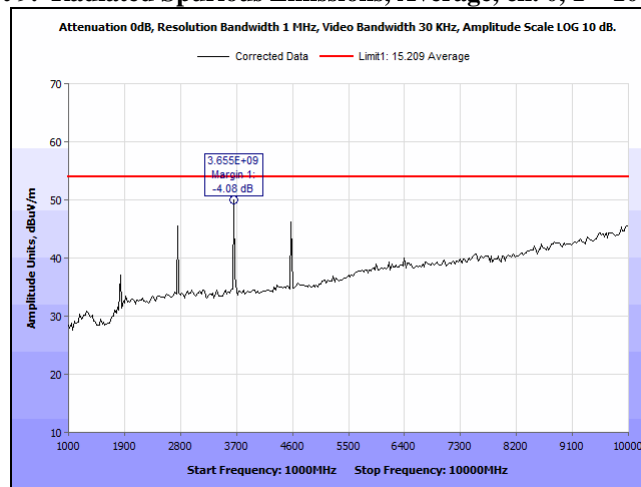


Plot 8. Radiated Band Edge, Low Edge, 902 MHz, ch. 0

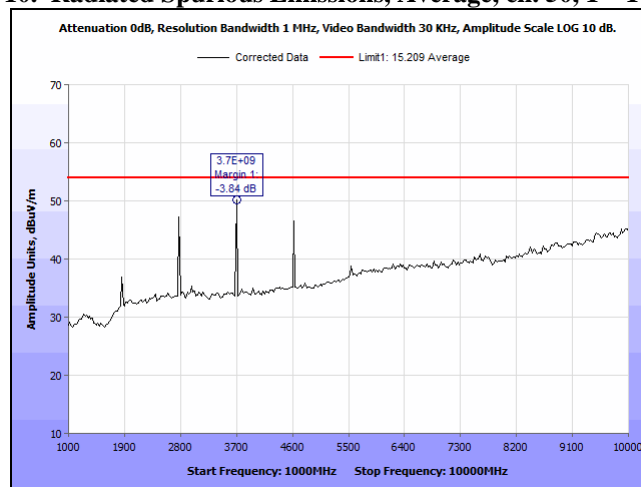
Spurious Emission of 1GHz- 18GHz



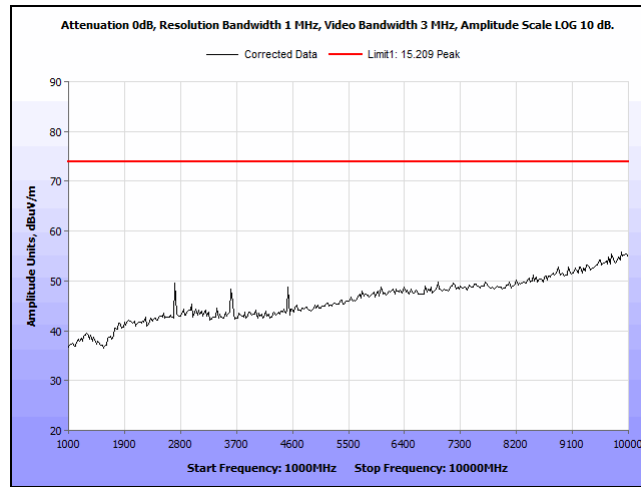
Plot 9. Radiated Spurious Emissions, Average, ch. 0, 1 – 10 GHz



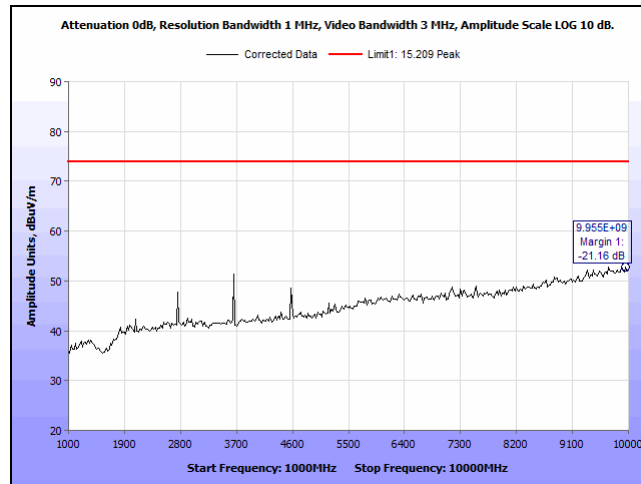
Plot 10. Radiated Spurious Emissions, Average, ch. 50, 1 – 10 GHz



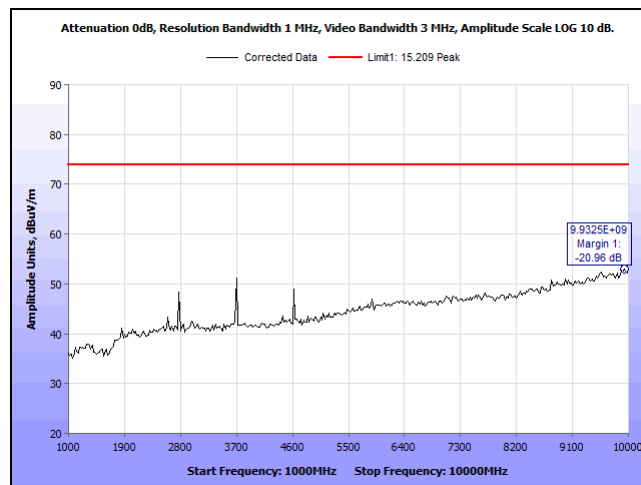
Plot 11. Radiated Spurious Emissions, Average, ch. 99, 1 – 10 GHz



Plot 12. Radiated Spurious Emissions, Peak, ch. 0, 1 – 10 GHz



Plot 13. Radiated Spurious Emissions, Peak, ch. 50, 1 – 10 GHz



Plot 14. Radiated Spurious Emissions, Peak, ch. 99, 1 – 10 GHz



Photograph 1. Radiated Spurious Emissions, Test Setup, 30 MHz - 1 GHz



Photograph 2. Radiated Spurious Emissions, Test Setup, 1 GHz - 18 GHz

Electromagnetic Compatibility Criteria for Intentional Radiators

20 dB Bandwidth

Test Procedure: The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately 1% of the total emission bandwidth, VBW > RBW. The 20 dB Bandwidth was measured and recorded. The measurements were performed on the low, mid and high channels.

Test Results The EUT was compliant with this requirement.

The 20 dB Bandwidth was determined from the plots on the following pages.

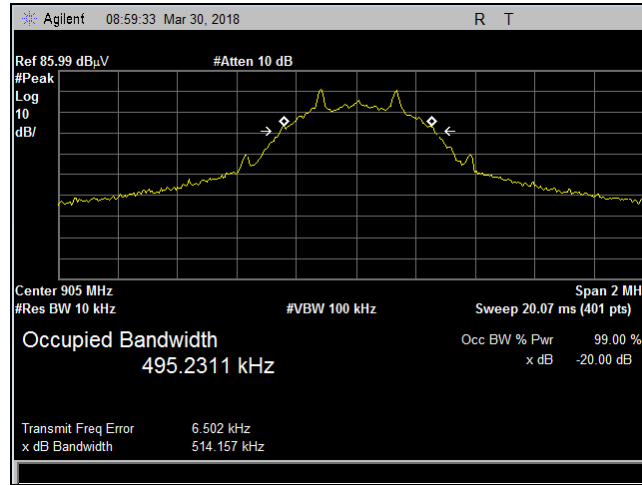
Test Engineer(s): Donald Salguero

Test Date(s): April 2, 2018

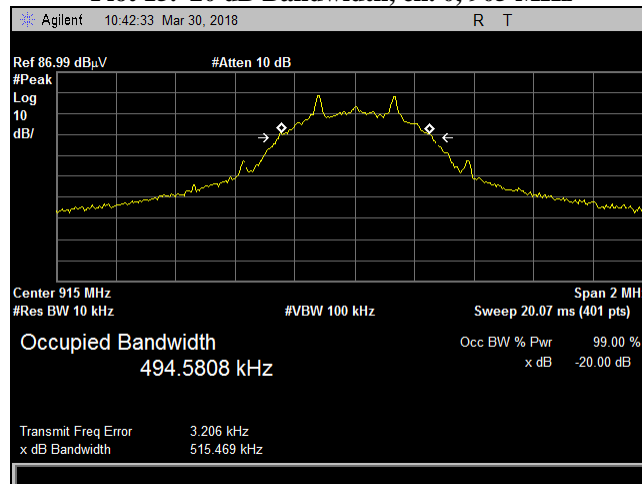
| Center Frequency (MHz) | 20dB Bandwidth (kHz) |
|------------------------|----------------------|
| 905 | 514.157 |
| 915 | 515.469 |
| 924.8 | 513.32 |

Table 11. 20dB Bandwidth, Test Results

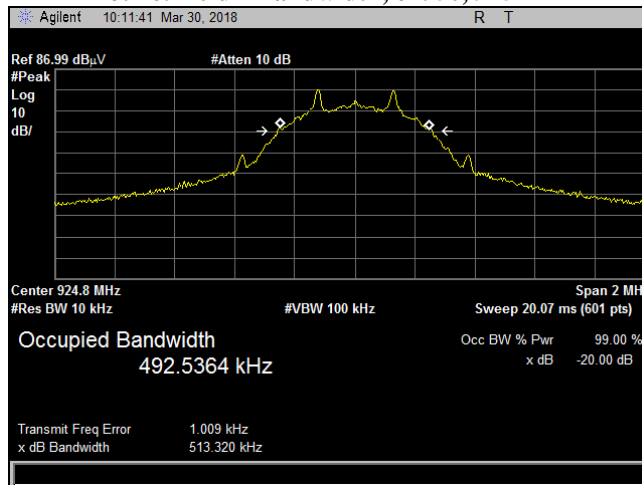
20 dB Bandwidth Test Results



Plot 15. 20 dB Bandwidth, ch. 0, 905 MHz



Plot 16. 20 dB Bandwidth, ch. 50, 915 MHz



Plot 17. 20 dB Bandwidth, ch. 99, 924.8 MHz

Maximum Permissible Exposure

RF Exposure Requirements: §1.1307(b)(1) and §1.1307(b)(2): Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission’s guidelines.

RF Radiation Exposure Limit: §1.1310: As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Limit: EUT’s operating frequencies @ 905-924.8; **Limit for Uncontrolled exposure:**
f/1500 mW/cm² = 0.617 mW/cm² Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

where, S = Power Density (mW/cm²)
P = Power Input to antenna (mW)
G = Antenna Gain (numeric value)
R = Distance (cm)

Test Results:

Max Fundamental field strength: 88.08 dBuV/m @ 924.8 MHz
EIRP = P + G = E + 20Log(d) – 104.77
P = E – G + 20 Log (d) – 104.77
P = -8.15 dBm = 0.153 mW

| FCC | | | | | | | | | |
|-----------------|-----------------|----------------|-----------------|-------------------|------------------------------------|-----------------------------|---------|---------------|--------|
| Frequency (MHz) | Con. Pwr. (dBm) | Con. Pwr. (mW) | Ant. Gain (dBi) | Ant. Gain numeric | Pwr. Density (mW/cm ²) | Limit (mW/cm ²) | Margin | Distance (cm) | Result |
| 924.8 | -8.15 | 0.153 | 1 | 1.259 | 0.00004 | 0.617 | 0.61696 | 20 | Pass |

The safe distance where Power Density is less than the MPE Limit listed above was found to be 20 cm.

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

| MET Asset # | Equipment | Manufacturer | Model | Last Cal Date | Cal Due Date |
|-------------|---------------------------------|----------------------|-----------------------|---------------|--------------|
| 1T4483 | Antenna; Horn | ETS-Lindgren | 3117 | 4/19/2017 | 10/19/2018 |
| 1T4751 | Antenna - Bilog | Sunol Sciences | JB6 | 2/28/2017 | 8/28/2018 |
| 1T4409 | EMI Receiver | Rohde & Schwarz | ESIB7 | 12/7/2016 | 12/7/2018 |
| 1T4300A | SEMI-ANECHOIC CHAMBER # 1 (FCC) | EMC TEST SYSTEMS | NONE | 1/31/2016 | 1/31/2019 |
| 1T4149 | High-Frequency Anechoic Chamber | Ray Proof | 81 | Not Required | |
| 1T4442 | Pre-amplifier, Microwave | Miteq | AFS42-01001800-30-10P | Func Verify | |
| 658297 | Spectrum Analyzer | Agilent Technologies | E4407B | 3/1/2018 | 3/1/2019 |

Table 12. Test Equipment

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.



V. Certification & User's Manual Information



Certification & User's Manual Information

A. Certification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

- (a) The various types of radio communication transmitting devices described throughout this chapter.
- (b) *The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.*
- (c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.
- (d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

- (a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:
 - (1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or
 - (2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.
- (d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.



- (e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:
- (i) *Compliance testing;*
 - (ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or
 - (v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.
- (e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.
- (f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.



Certification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

- (a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.¹ *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.*
- (b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.907 Certification.

- (a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.
- (b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

¹ In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.



Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

- (a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.
 - (1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.
 - (i) *If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.*
 - (ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.
 - (2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.



Certification & User's Manual Information

Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

(a) *In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:*

- (1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

- (2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.

- (3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- (4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

- (5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



Verification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

- (a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

- (b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to 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 when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

End of Report