



QUALIFICATION TEST REPORT

EMISSIONS -FCC Part 15

Test Report Number: INO 9907 1502 Date of Issue: 29 July 1999
Model No: FA223 Date of Test Article Receipt: 21 July 1999
Type of product: Part 15 Intentional Radiator

Manufacturer: Inovonics Corporation

Address: 2100 Central Avenue

Boulder, CO 80301

Test Results: Complies Does Not Comply

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(NVLAP Signatory)

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Accredited by NIST NVLAP for FCC Part 15

TEST REPORT

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All Criterion Technology instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 9001, ISO Guide 25, ANSI/NCSL Z540-I-1994 and are traceable to national standards.

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TEST REPORT

Section 1 Executive Summary

The test article was in compliance with all the test standards listed below.

FCC Part 15 Subpart A

FCC Part 15 Subpart B

FCC Part 15 Subpart C

Radiated Emissions

Intentional Radiators, Paragraph 15.247(c)*

All test methods were performed in accordance with the standards listed above.

***Inovonics will provide compliance data for the remaining applicable portions CFR 47 Part 15.247.**

Section 2 Emissions Test Standards

The emissions tests were performed according to following standards:

FCC Part 15, Subpart B
FCC Part 15, Subpart C

Class A
Paragraph 15.247(c)

Class B

Other:

Part 2.1 FCC Part 15 Subpart B –Radiated Emissions

Measurement or radiated emissions (electric field) in the frequency range of 1.5 MHz-1000 MHz were tested in a horizontal and vertical polarization as indicated below:

Environmental conditions in the lab:

Date(s) of Test: mm/dd/yy 7/21/99
 Temperature: 73°F
 Rel. Humidity 42%
 Test Voltage [X]120 V, 60Hz [] ___ V, Hz

Test location:

[X] Criterion Technology Open Area Test Site
 [] Pre-Scan In Semi-Anechoic Chamber
 [] Not applicable

Test distance (antenna - EUT):

[X]1 meter [X]Preliminary Measurement []Final Measurement
 []3 meters []Preliminary Measurement []Final Measurement
 [X]10 meters [X]Preliminary Measurement [X]Final Measurement
 []30 meters []Preliminary Measurement []Final Measurement
 []Not applicable

Test instruments:

Calibration Due Date

[X] Hewlett Packard Spectrum Analyzer, Model 8566B	7/12/00
[X] Hewlett Packard Quasi Peak Adapter, Model 85650A	7/12/00
[] Hewlett Packard Tracking Generator, Model 85645A	5/28/00
[] Rohde and Schwarz Receiver, Model, ESHS-30	8/26/99
[X] Rohde and Schwarz Model Receiver, ESVS-30	6/4/00
[] EMCO, BiConnical Antenna, Model 3108	6/1/00
[] EMCO, Log Periodic Antenna, Model 3146	6/1/00
[X] Chase, BiLog Antenna, Model 1121	6/1/00
[X] EMCO Loop Antenna, Model 6502	10/7/99
[X] Mini Circuits Pre-Amp	6/2/00
[] Not Applicable	

Test accessories:

[] Other
 [X] Not applicable

Results

Radiated Emissions (Electric Field) 1.5 MHz - 1000 MHz

The requirements are [X] PASS [] FAIL [] N/A

Min. limit margin 7.31 dB at 901.95 MHz*

Max. limit exceeding ___ dB at ___ MHz

Remarks: Reference Section 4 for Data Sheets. *This emission was from sidebands generated by the transmitted signal inside the 902 to 928 MHz band. Applying the limit for any 100 KHz segment outside the transmit band per Subpart C 15.247(c), the margin to limit is 26.06 dB. Excepting the transmit band, no other emissions were noted from 1.5 MHz to 1 GHz.

Part 2.2 FCC Part 15 Subpart C –Intentional Radiated Fields

Measurement or radiated emissions (electric field) in the frequency range of 1.5 MHz-10,000 MHz were tested in a horizontal and vertical polarization as indicated below:

Environmental conditions in the lab:

Date(s) of Test: mm/dd/yy 7/21/99
 Temperature: 73°F
 Rel. Humidity 42%
 Test Voltage [X]120 V, 60Hz [] ___ V, Hz

Test location:

[X] Criterion Technology Open Area Test Site
 [] Pre-Scan In Semi-Anechoic Chamber
 [] Not applicable

Test distance (antenna - EUT):

[X]1 meter [X]Preliminary Measurement []Final Measurement
 [X]3 meters [X]Preliminary Measurement [X]Final Measurement
 [X]10 meters [X]Preliminary Measurement [X]Final Measurement
 []30 meters []Preliminary Measurement []Final Measurement
 []Not applicable

Test instruments:

Calibration Due Date

[X] Hewlett Packard Spectrum Analyzer, Model 8566B	7/12/00
[X] Hewlett Packard Quasi Peak Adapter, Model 85650A	7/12/00
[] Hewlett Packard Tracking Generator, Model 85645A	5/28/00
[] Rohde and Schwarz Receiver, Model, ESHS-30	8/26/99
[X] Rohde and Schwarz Model Receiver, ESVS-30	6/4/00
[X] Chase, BiLog Antenna, Model 1121	6/1/00
[X] Antenna Research, Model 1181A (sn: 1057)	4/8/00
[X] Amp3 and High Freq. Cable Set	9/30/99
[X] Mini Circuits Pre-Amp, Amp 2	6/2/00
[X] EMCO Loop Antenna, Model 6502	10/7/99
[] Not Applicable	

Test accessories:

[X] Other HP 8445B Preselector Filter 2/14/00
 [] Not applicable

Results

Radiated Emissions (Electric Field) 1.5 MHz - 10,000 MHz

The requirements are [X] PASS [] FAIL [] N/A

Min. limit margin 14.26 dB at 6433.5 MHz*

Max. limit exceeding ___ dB at ___ MHz

Remarks: Reference Section 4 for Data Sheets

*See Part 4.3 for a discussion of the specification limits applied to the emission data above 1 GHz.

Section 3 Test Setup Photographs

Part 3.1 Radiated Emissions Orientation 1 Setup - Front View



Part 3.2 Radiated Emissions Orientation 2 Setup - Front View



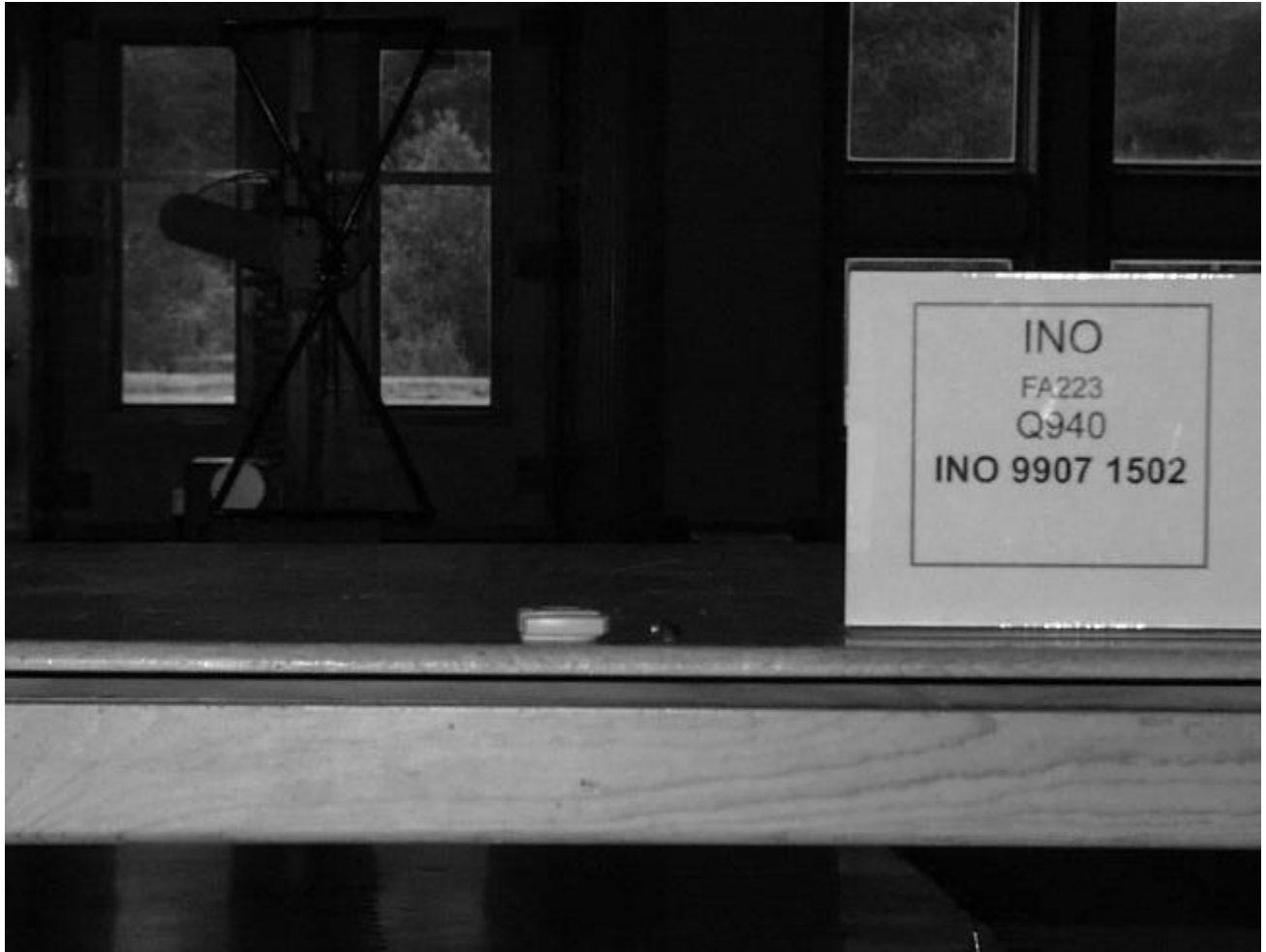
Part 3.3 Radiated Emissions Orientation 3 Setup - Front View



Part 3.4 Radiated Emissions Setup, 1 to 10 GHz - Rear View



Part 3.5 Radiated Emissions Setup, 30 to 1000 MHz - Rear View



Part 3.6 Radiated Emissions Prescan Setup, 1.5 to 30 MHz - Rear View



Part 3.7 FA223 Top View



Note: The toggle switch is not a part of the production version of this device. It was used to enable the three frequency continuous hop sequence used during the test (fo low, mid, and high).

Part 3.8 FA223, Bottom View



Part 3.9 FA223, Inside Bottom View

