Electromagnetic Compatibility Criteria
Test Report
For the
Omega Engineering, Inc.
Universal Wireless Radio Module
Model:UWM-0001

Tested Under
FCC Certification Rules
Contained in
CFR Title 47, Part 15 Subpart B,
15.249 Subpart C
For Intentional Radiators
Wednesday, April 29, 2009

Prepared For:

Omega Engineering Inc.
One Omega Drive
P.O. BOX 4047
Stamford, CT 06907-0047

Report Written By:

Frank Welsh
Lab Manager
Analab Llc.

Customer Review:

630 Heron Drive, P.O. Box 336, Bridgeport, NJ 08014
FRN 0007-8959-64 Test Site #793819

Analab Report # 1624F

INDEX

TABLE OF FIGURES

1.0 Administration

1.1 Purpose of Test:

The purpose of this test suite is to establish the compliance of Omega Engineering UWM-0001 with the requirements of CFR Part 15 §15.249. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accord with §2.1033 this document is provided with the test results of the UWM-0001 in support for the certification of the product. Omega Engineering has been advised that this document and the information contained herein, must be kept on file for two (2) years after the permanent discontinuance of manufacture of the UWM-0001.

1.2 Summary of Test Results:

Table 1 contains a listing of the tests performed on the product sample of the UWM-0001 and the results of those tests. All tests were conducted using measurement procedures outlined in ANSI C63.4-2003.

FCC Reference	Description	Results
§15.203	Antenna Requirement	Compliant
§15.207	AC Power Line Conducted Emissions	Not Applicable
§15.249(d), §15.209	Spurious Radiation	Compliant
§15.249	Radiated Fundamentals	Compliant

Figure 1. Executive Summary of EMC Part 15.249 Compliance Testing.

Test Period:
Start: Wednesday, 15-Apr-2009
Completion: Thursday, 28-Apr-2009

Location of Test Facility:
Analab Llc.
630 Heron Drive
Bridgeport, NJ 08014

Test Personnel:
Analab Llc.
Frank Welsh

2.0 Overview

This document is a report of the results of testing of the subject product to the requirements of FCC per the limits listed in table 1. The equipment tested is a module designed to deliver process information to a target at a remote location over an RF energy channel.. This module has endured the testing scrutiny of these requirements and has been found to be compliant with the parameters set forth therein. Since the unit is not connected to the mains, and is exclusively DC powered by a host, §15.107 (Conducted Limits) is non-applicable.

Test setups and procedures are described in this report and test results are presented herein. The results contained in the present document relate only to the product tested.

Model Tested:	UWM-0001	
EUT Specifications:	Primary Power: 3.6 VDC (Lithium Cell)	
	FCC ID: WR3-UWM100	
	Modulation Type:	2GFSK
	Emission Designators:	279K8F1D
	Equipment Code:	DXX
	EUT Frequency Range:	910-920 MHz
Environmental Test Conditions:	Temperature (22º C +/-5)	
	Relative Humidity (30-60%)	
	Barometric Pressure (860-1060 mbar)	
Evaluated By:	Frank Welsh	
Report Date:	30-Apr-09	

Figure 2. EUT Specifications

2.1 Test Specifications

CFR 47 Part 15 Subpart C	*Federal Communications Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment and Use of Radio Frequencies.*
CFR 47, Part 15, Subpart B	*Electromagnetic Compatibility: Criteria for Radio Frequency Devices.*
ANSI C63.4: 2003	*Methods of Measurement of Radio Noise Emissions from low voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.*

2.2 Test Site

All testing was performed at the facilities of Analab Llc.| 630 Heron Drive | Bridgeport, NJ 08014 (FRN 0007-8959-64 Test Site #793819). All equipment used in measurements is current in calibration, accurate in performance and bears traceability to the National Institute of Standards and Technology.

2.3 Description of Test Sample

The Omega Universal Wireless Module model UWM-0001 is a DC powered, microprocessor based, 915 MHz transmitter. It accepts process input voltage ranging from 0 to 1000mV. The microprocessor then converts this information to digital data, combines the data with additional information then transmits the entire data packet serially over the RF channel. The microprocessor then powers down into a quiescent state to wait for the next interrupt from the on board timer. The microprocessor is brought up from a power down (sleep) state every 2 seconds by the internal timer in the microprocessor.

The antenna is a surface mount chip antenna, Johanson Technology Part #0915AT43A0026.

Due to the “intermittent’ nature of the transmitter in normal operation, a special test code was embedded into the test sample to facilitate constant transmit mode for testing purposes. The artificial message that was transmitted was an alternating string of 1’s and 0’s. The hardware’s design precludes transmitting an unmodulated carrier. Also, the product is user configurable to transmit in one of three frequencies; 910 MHz, 915 MHz and 920 MHz.

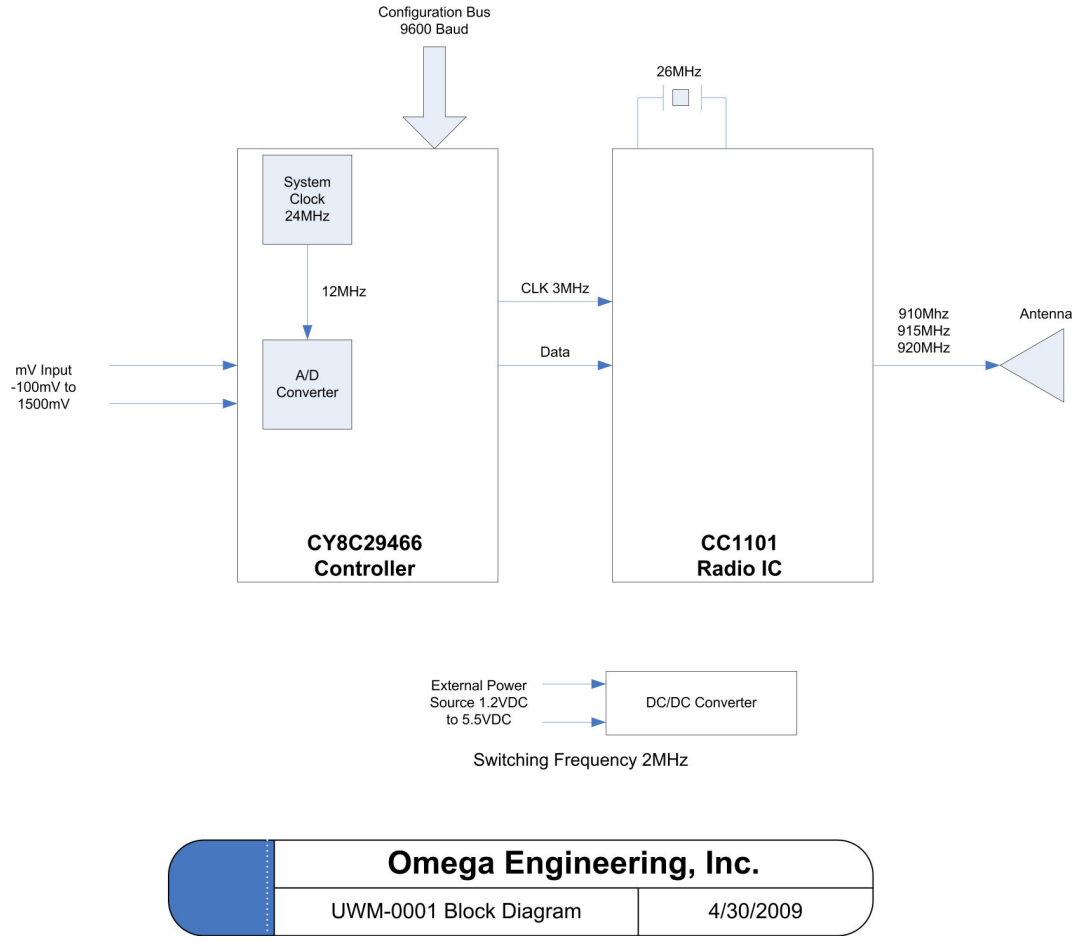


Figure 3. Block Diagram of the Circuit Configuration of the EUT.

2.4 Equipment Configuration

The EUT was set up as outlined in the previous section. The processor basically ignored the condition of the input; hence no signal was interfaced to this port.

Ref. ID	Name / Description	Model Number	Serial Number	Rev. #
N/A	Wireless Module	UWM-0001	**04090001**	N/A

2.5 Supporting Equipment

The EUT being designed to be powered from the host product in which it resides, test power was supplied from an external battery. This was implemented via. an external battery holder equipped with an on/off switch

2.6 Ports and Cabling Information

Ports and cabling information was not required for the equipment test.

2.7 Mode of Operation

As indicated earlier, special firmware was installed in the EUT to allow continuous testing. The input port of the unit is left unconnected and the data transmitted continuously is simulated to allow testing under a worst case scenario. Since the EUT is designed to extract power from the host unit that it is operating within, and since it is tested in stand alone operation, connection to a external source was required. The external source was held in a special fixture with leads extending from the fixture. These leads were connected to the EUT at the power port of the unit.

2.8 Method of Monitoring EUT Operation

Presence of the transmitted signal at the transmitted frequency indicates the EUT is operational. No other indication is required.

2.9 Modifications

2.9.1 Modifications to EUT.

No modifications were made to the EUT

2.9.2Modifications to Test Standard

No modifications were made to the EUT

2.10 Disposition of EUT.

The test sample and all supporting equipment submitted to Analab were returned to Omega Engineering upon completion of testing.

3.0 Electromagnetic Compatibility Criteria for Unintentional Radiators

§15.107 Conducted limits.

15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 3, as measured using a 50 [mu]H/ 50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

15.107 (b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms LISN. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	15.107(b), Class A Limits (dBuV)		15.107(a), Class B Limits (dBuV)	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15 - 0.5	79	66	66-56	56-46
0.5 - 5.0	73	60	56	46
5.0 - 30	73	60	60	50
Note -- The lower limit shall apply at the transition frequencies.				

Figure 4. Conducted Limits for RF Devices extracted from FCC Part 15 § 15.107 (a) (b)

Test Results: The requirement was deemed not applicable with this requirement since the device is DC powered.

§ 15.109 Radiated Emission Limits

Test Requirements: 15.109 Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the class B limits expressed in table 4.

(b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the class A limits of table 4:

Frequency Range (MHz)	Field Strength (dBμV/m)	
	§15.109 (b), Class A Limit (dBμV/m) @ 10m	§15.109 (a), Class A Limit (dBμV/m) @ 3m
30 - 88	39	40
88 - 216	43.5	43.5
216 - 960	46.4	46
Above 960	49.5	54

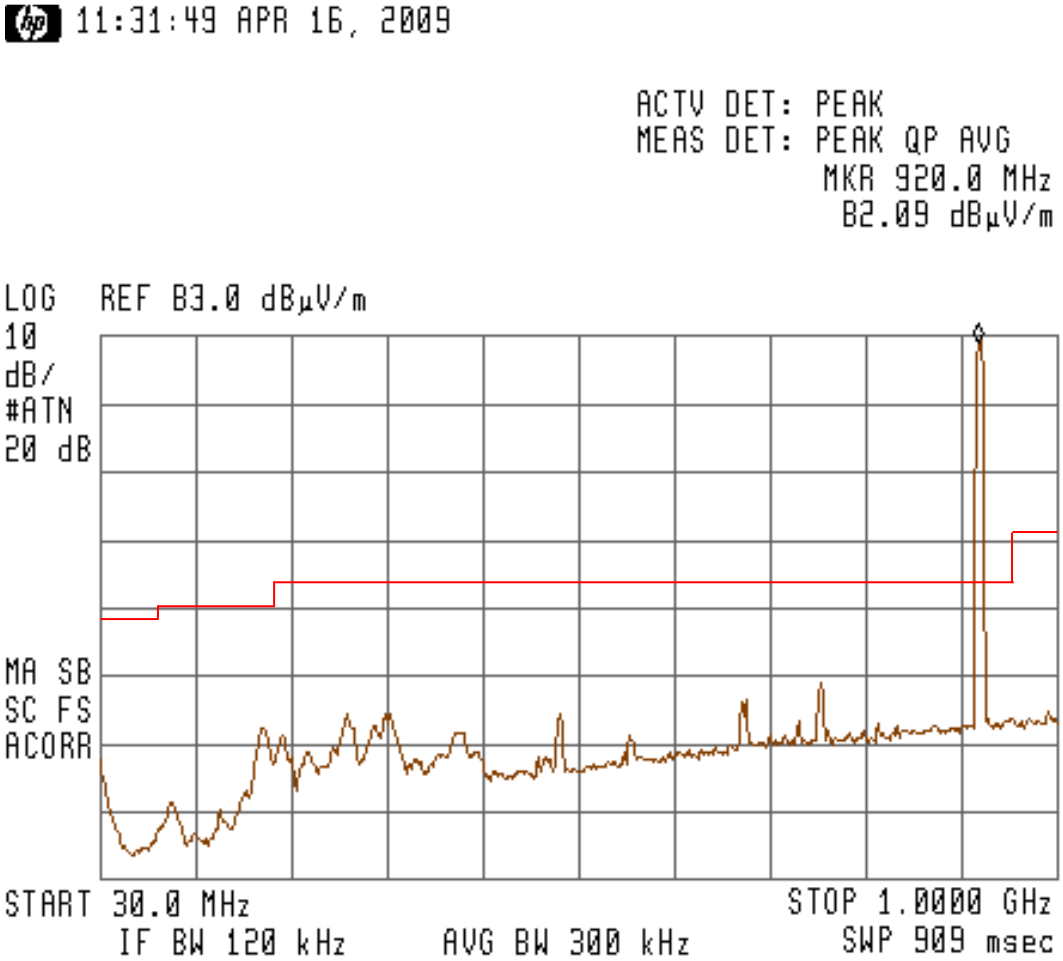
Figure 5. Radiated Emission Limits extracted from FCC Part 15 §15.109 (a) (b)

Test Procedure: The EUT was placed on a 0.8m high wooden table in the Open Area Test Site (OATS) on a turntable directed from the test station inside the lab. Using the methods of testing and test conditions prescribed in ANSI C63.4 an antenna mounted on an adjustable mast was positioned 3m from the EUT. A prescan was first performed in an anechoic chamber to establish prominent RF emissions. For final emissions, measurements at each frequency of interest were performed. At each point, the EUT was rotated and the antenna height was varied from 1 to 4 meters in height to maximize the detection level. Measurements in both polarities were measured and data was recorded. Unless otherwise specified, measurements were made using quasi-peak detector with a 120 kHz bandwidth.

Test Results: The EUT was found compliant with Class B requirements of this section. Measured emissions were below applicable limits.

Frequency (MHz)	EUT Azimuth (Degrees)	Antenna Polarity	Antenna Height (cm)	Final Amplitude (dBuV/m)	Limit	Margin (dB)
33.015	0	H	100	25.5	40	14.5
33.015	240	V	115	25.7	40	14.3
195.026	0	H	120	27.3	43.5	16.2
195.026	0	V	100	27	43.5	16.5
321.01	0	H	100	24.2	46	21.8
321.01	47	V	100	23.9	46	22.1
498.63	0	H	132	27	46	19
498.63	0	V	190	26.7	46	19.3
684.75	203	H	194	15	46	31
684.75	45	V	120	15.2	46	30.8
761.38	0	H	100	28.2	46	17.8
761.38	0	V	100	28.1	46	17.9

Figure 6. Radiated Emissions Limits, Test Results



Note: Emissions detected at 920 MHz is the fundamental.

Figure 7 Radiated Emissions Pre-Scan

UWM-0001 test unit situated on test table inside environmentally controlled OATS in preparation for emissions testing.

Open Area Test Site showing the radio lucent chamber with the antenna mast located at the three meter position.

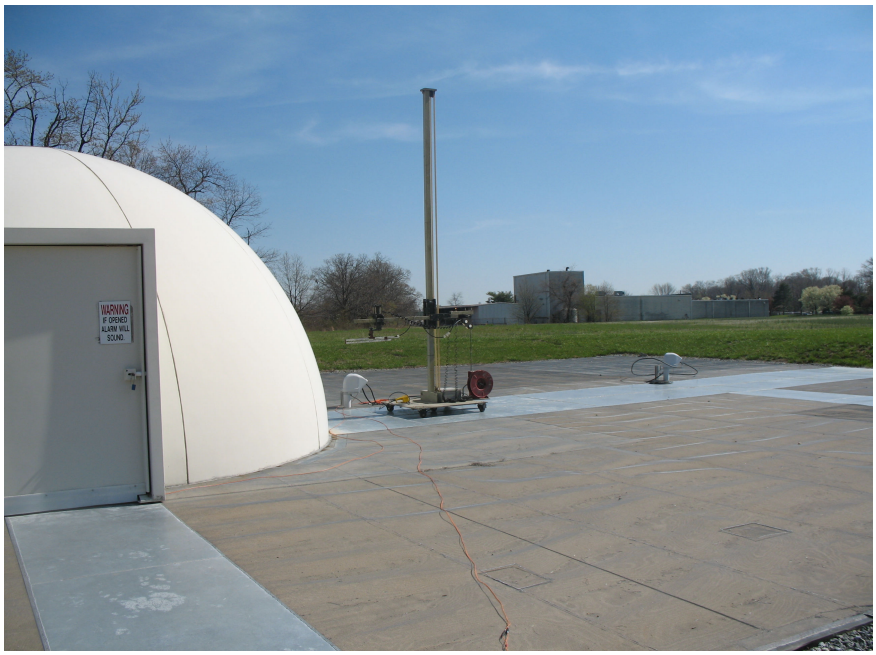


Figure 8. Photographs of test setup of EUT for Radiated Emissions Testing.

4.0 Electromagnetic Compliance Testing for Intentional Radiators

4.1 Conducted Emissions §15.207 (a)

This requirement was deemed non-applicable since the product is not connected to the mains.

4.2 Antenna Requirement §15.203

Requirement: 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.

Result: The product is coupled into free space by an integral chip antenna permanently attached to the circuit board. The antenna has a -1dBi gain. Therefore, the EUT conforms to this requirement.

4.3 Radiated Field Strength of Fundamental §15.249 (a)

Requirement: The three meter field strength of the fundamental emission from intentional radiators operated within 902 – 928 MHz frequency bands shall comply with the following requirement: 50mV / m (94 dBµV / m), measured in the quasi-peak mode.

Test Procedure: The product transmitter was set to the mid channel and placed in the OATS with the test antenna and mast placed at the three meter position (Figure 8). Measurements were performed with the Product and table rotated 360° and varying the mast height from 1m to 4m in height to maximize the emissions for worst case. Once this point was found, the measurement was taken in quasi-peak mode with a bandwidth of 120 kHz. Procedure was then repeated for the upper and for the lower channels.

Test Result: The EUT is compliant with §15.249 for fundamental field strength (See figure 9 for readings).

Channel	Azimuth (Degrees)	Polarity	Antenna Height (cm)	Final Reading (Corrected) (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Low	290	H	110	88.31	94	5.69
	290	V	100	85.98	94	8.02
Mid	315	H	104	90.75	94	3.25
	227	V	107	85.7	94	8.3
High	297	H	110	88.16	94	5.84
	290	V	107	82.56	94	11.44

Figure 9. Fundamental Field Strength Readings

4.4 Radiated Harmonic Emissions §15.249

Requirement: The three meter field strength of the harmonic emission from intentional radiators operated within 902 – 928 MHz frequency bands shall comply with the following requirement:
500 μV / m (54 dBμV / m), measured in average mode. Additionally, no peak field strength shall exceed the maximum the specified average by more than 20 dB under any modulation condition.

Procedure: The EUT transmitter was set to the aspect channel and placed in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360° and varying the adjustable antenna mast to establish maximum emissions. An RF filter was used to attenuate the fundamental prior to the pre-amplifier stage.

Test Results: The EUT was found to be compliant with this section (See Figure 10)

Channel (MHz)	Frequency (GHz)	Final Measurement corrected for cable loss, preamp, ACF and distance (dBmV/m)	Limit (dBmV/m)	Remark	Margin
910	1.820	42.3	54.0	Avg.	11.7
	1.820	57.0	74.0	Peak	17.0
	2.730	24.1	54.0	Avg.	29.9
	2.730	63.6	74.0	Peak	10.4
915	1.830	39.3	54.0	Avg.	14.7
	1.830	40.7	74.0	Peak	33.3
	2.745	20.5	54.0	Avg.	33.5
	2.745	33.0	74.0	Peak	41.0
920	1.840	37.0	54.0	Avg.	17.0
	1.840	54.9	74.0	Peak	19.1
	2.760	19.3	54.0	Avg.	34.7
	2.760	61.9	74.0	Peak	12.1

Note: All other emissions were measured at the noise floor.

Figure 10. Test Results Radiated Harmonic Emissions Measurements.

Figure 11 Setup Radiated Harmonic Emissions Measurements

4.5 Spurious Emissions Requirements – Radiated Band Edge §15.249 (d)

Requirement: Emissions radiated outside 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 emissions limits in §15.209, whichever is the lesser attenuation.

Procedure: The EUT was placed in the environmentally controlled OATS with the test antenna and mast placed at the three meter position (See figure 8). The table with the EUT was rotated 360° and the mast with the antenna was moved through 1 to 4 meters in height to establish worst case emanation levels.

Test Results: The EUT is compliant with the requirements of §15.249 (d). Figures 12 and 13 show band edge compliance. Tests under §15.109 showed no spurs that are close to the limit from 1 to 1000MHz. A separate investigation showed no spurious energy from 1 to 10 GHz that are above the limit.

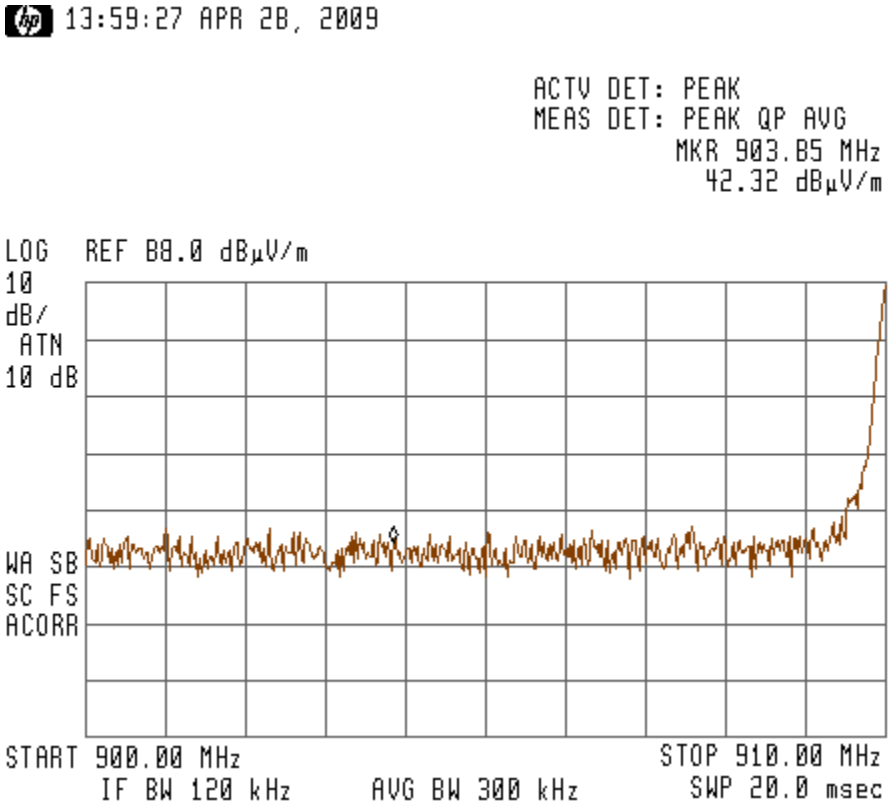


Figure 12. Radiated Band Edge, Low Channel

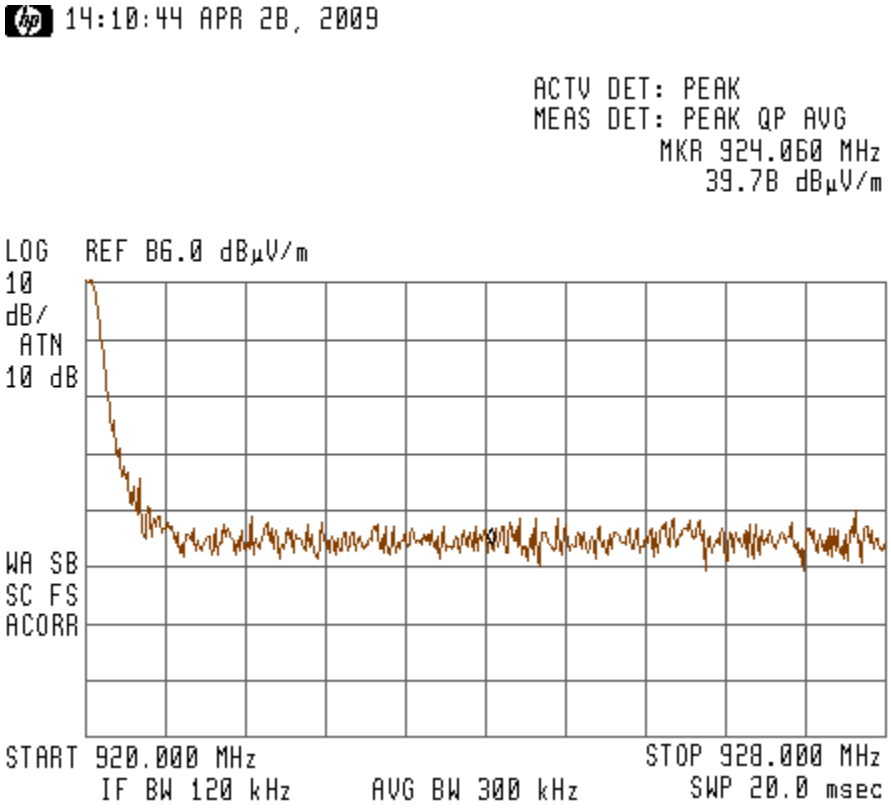


Figure 13. Radiated Band Edge, High Channel

5.0 Test Equipment

Analab #	Description	Manufacturer	Model #	Serial #	Calibration Due Date
034	Anechoic Chamber	Ray Proof	MK-101	11597	7-Jun-09
100	Biconilog Ant.	ETS	3142C	00083057	25-Mar-10
102	Biconical Ant.	EMCO	3110B	9603-2390	21-Nov-10
110	Log Periodic Ant.	EMCO	3146	9606-4565	26-Nov-10
120	Horn Antenna	A.H. Systems	SAS 200/571	253	20-Nov-10
200	EMI Receiver	H/P Agilent	85462A	3325A00116	9-Jan-10
201	RF Filter Section	H/P Agilent	85460A	3330A00124	9-Jan-10
202	Spectrum Analyzer	Agilent	8565EC	4103A00428	11-May-09
210	EMI Receiver	H/P Agilent	8546A	3325A00118	12-Sep-09
211	RF Filter Section	H/P Agilent	85460A	3330A00155	12-Sep-09
304	Signal Generator	Rohde & Schwarz	SMB 100A	100761	29-May-09
901	Position Controller	EMCO	2090	9607-1155	NA
902	Antenna Mast	EMCO	2070-5	9604-1964	NA
903	EUT turntable	EMCO	2081		NA

Figure 14. Test Equipment Used in Test Sequence of the Present Report

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 radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency 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 radiofrequency 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 section, 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 Sec. 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 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.

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. *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 representations and test data submitted by the applicant.

(b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Sec. 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Sec. 2.1043.

§2.901 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 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.

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 user's 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.

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

§15.105 Information to 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 his 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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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