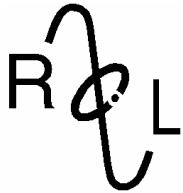


# **SUBMITTAL APPLICATION REPORT**

**FOR  
GRANT OF CERTIFICATION**

FOR  
**MODEL: EZ09  
2400-2483.5 MHz Transmitter  
Broadband Wireless Data Transmitter**

FOR  
**E-ZY.NET  
Smirnis 14, 591 00 Veria  
Greece**



**ROGERS LABS, INC.**

4405 West 259<sup>th</sup> Terrace  
Louisburg, KS 66053  
Phone / Fax (913) 837-3214

**ENGINEERING TEST REPORT  
FOR  
APPLICATION of  
GRANT of CERTIFICATION**

FOR  
**CFR 47, PART 15C - INTENTIONAL RADIATORS**  
**Paragraph 15.247**  
**Low Power License Exempt Intentional Radiator**

For

**E-ZY.NET**  
Smirnis 14, 591 00 Veria  
Greece  
Dimitrios Sidiropoulos,

**BROADBAND WIRELESS DATA TRANSMITTER**  
Model: EZ09  
Frequency Range 2400-2483.5 MHz  
FCC ID#: R5A EZ09

Test Date: May 13, 2005

Certifying Engineer:

*Scot D Rogers*

Scot D. Rogers  
ROGERS LABS, INC.  
4405 West 259<sup>th</sup> Terrace  
Louisburg, KS 66053  
Phone: (913) 837-3214  
FAX: (913) 837-3214

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**FORWARD:**

The following is submitted for consideration in obtaining a Grant of Certification for a Low Power License Exempt Intentional Radiator operating under CFR Paragraph 15.247.

Name of Applicant:

E-ZY.NET  
Smirnis 14  
591 00 Veria  
Greece

Model: EZ09 transceiver.

FCC I.D.: R5A EZ09.

Frequency Range: 2400-2483.5 MHz.

Operating Power: 100 mW conducted power.

**1) Applicable Standards & Test Procedures**

a) In accordance with the Federal Communications Code of Federal Regulations, dated October 1, 2004, Part 2, Subpart J, Paragraphs 2.907, 2.911, 2.913, 2.925, 2.926, 2.1031 through 2.1057, and applicable parts of paragraph 15, Part 15C Paragraph 15.247 the following is submitted:

b) Test procedures used are the established Methods of Measurement of Radio-Noise Emissions as described in the ANSI 63.4-1992 Document FCC, documents DA00-1407 and DA00-705 and/or TIA/EIA 603-1.

**2.1033(b) Application for Certification**

(1) Manufacturer: E-ZY.NET  
Smirnis 14  
591 00 Veria  
Greece

(2) Identification: Model: EZ09  
FCC I.D.: R5A EZ09

(3) Instruction Book:  
Refer to Exhibit for Instruction Manual.

(4) Description of Circuit Functions:  
Refer to Exhibit of Operational Description.

(5) Block Diagram with Frequencies:  
Refer to Exhibit of Operational Description.

(6) Report of Measurements:  
Report of measurements follows in this Report.

(7) Photographs: Construction, Component Placement, etc.:  
Refer to Exhibit for photographs of equipment.

(8) No Peripheral Equipment was Necessary.

(9) Transition Provisions of 15.37 are not being requested.

(10) Not Applicable. The unit is not a scanning receiver.

(11) Not Applicable. The EUT does not operate in the 59 – 64 GHz frequency band.

## 2) Equipment Tested

<u>Equipment</u>	<u>Model</u>	<u>FCC I.D.#</u>
EUT	EZ09	R5A EZ09
CPU	Dell PP02X	DoC

## 3) Equipment Function and Testing Procedures

The EUT is a 2400-2483.5 MHz radio transmitter used to transmit data to and from remote locations offering broadband wireless internet connectivity. The unit is marketed for use to incorporate a wireless link to exchange data information from one point to another. For testing purposes the transceiver was powered from the supplied AC power supply and set to transmit in a maximum data mode. The unit operates from external supplied 18 volt direct current supplied from the AC/DC adapter. The device is professionally installed and thus complies with the antenna connection requirements.

## 4) Equipment and Cable Configurations

### ***Conducted Emission Test Procedure***

The unit typically operates from the manufacturer supplied 18 volt supply. For testing purposes, the manufacturer supplied eighteen-volt wall transformer was used to power the unit. The test setup including the EUT was arranged in a typical equipment configuration and placed on a 1 x 1.5-meter wooden bench, 0.8 meters high located in a screen room. The power lines of the system were isolated from the power source using a standard LISN with a 50 - mHy choke. EMI was coupled to the spectrum analyzer through a 0.1 mF capacitor internal to the LISN. The LISN was positioned on the floor beneath the wooden bench supporting the EUT. The power lines and cables were draped over the back edge of the table.

### ***Radiated Emission Test Procedure:***

The EUT was placed on a rotating 1 x 1.5-meter wooden platform, 0.8 meters above the ground plane at a distance of 3 meters from the FSM antenna. EMI energy was maximized by equipment placement, raising and lowering the FSM antenna, changing the antenna polarization, and by rotating the turntable. Each emission was maximized before data was taken using a spectrum analyzer. Refer to photographs in the exhibits for EUT placement.

## **5) List of Test Equipment**

A Hewlett Packard 8591EM Spectrum Analyzer was used as the measuring device for the emissions testing of frequencies below 1 GHz. A Hewlett Packard 8562A Spectrum Analyzer was used as the measuring device for testing the emissions at frequencies above 1 GHz. The analyzer settings used are described in the following table. Refer to the appendix for a complete list of test equipment.

<b>HP 8591 EM ANALYZER SETTINGS</b>		
CONDUCTED EMISSIONS:		
RBW	AVG. BW	DETECTOR FUNCTION
9 kHz	30 kHz	Peak / Quasi Peak
RADIATED EMISSIONS:		
RBW	AVG. BW	DETECTOR FUNCTION
120 kHz	300 kHz	Peak / Quasi Peak
<b>HP 8562A ANALYZER SETTINGS</b>		
RBW	VIDEO BW	DETECTOR FUNCTION
100 kHz	100 kHz	PEAK
1 MHz	1 MHz	Peak / Average

<u>EQUIPMENT MFG.</u>	<u>MODEL</u>	<u>CAL. DATES</u>	<u>DUe.</u>
LISN Comp. Design	FCC-LISN-2-MOD.CD	10/04	10/05
Antenna ARA	BCD-235-B	10/04	10/05
Antenna EMCO	3147	10/04	10/05
Antenna EMCO	3143	5/05	5/06
AnalyzerHP	8591EM	5/05	5/06
AnalyzerHP	8562A	2/05	2/06

## 6) Units of Measurements

Conducted EMI: Data is in dB $\mu$ V; dB referenced to one microvolt.

Radiated EMI: Data is in dB $\mu$ V/m; dB/m referenced to one microvolt per meter.

## 7) Test Site Locations

**Conducted EMI:** The AC power line conducted emissions tests were performed in a shielded screen room located at Rogers Labs, Inc., 4405 W. 259<sup>th</sup> Terrace, Louisburg, KS.

**Radiated EMI:** The radiated emissions tests were performed at the 3 meters, Open Area Test Site (OATS) located at Rogers Labs, Inc., 4405 W. 259<sup>th</sup> Terrace, Louisburg, KS.

**Site Approval:** Refer to Appendix for FCC Site Approval Letter, Reference # 90910.

## 8) SUBPART B – UNINTENTIONAL RADIATORS

### ***Conducted EMI***

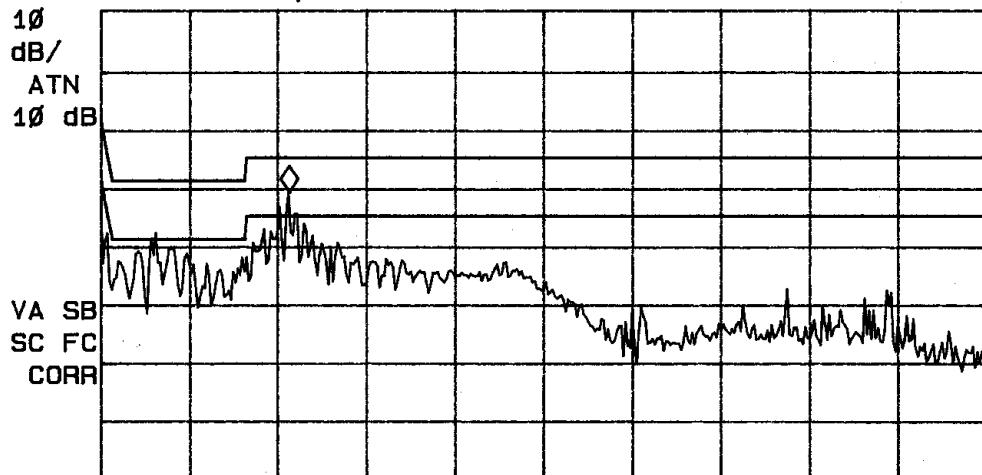
The EUT was arranged in a typical equipment configuration and placed on a 1 x 1.5 - meter wooden bench 80 cm above the conducting ground plane, floor of a screen room.

The bench was positioned 40 cm away from the wall of the screen room. The LISN was positioned on the floor of the screen room 80-cm from the rear of the EUT. The manufacturer supplied AC power adapter for the EUT was connected to the LISN. A second LISN was positioned on the floor of the screen room 80-cm from the rear of the supporting equipment of the EUT. All power cords except the EUT were then powered from the second LISN. EMI was coupled to the spectrum analyzer through a 0.1 mF capacitor, internal to the LISN. Power line conducted emissions testing were carried out individually for each current carrying conductor of the EUT. The excess length of lead between the system and the LISN receptacle was folded back and forth to form a bundle not exceeding 40 cm in length. The screen room, conducting ground plane, analyzer, and LISN were bonded together to the protective earth ground. Preliminary testing was performed to identify the frequency of each radio frequency emission displaying the highest amplitude. The cables were repositioned to obtain maximum amplitude of measured EMI level. Once the worst-case configuration was identified, plots were made of the EMI from 0.15 MHz to 30 MHz then the data was recorded with maximum conducted emissions levels. Refer to figures one and two for plots of the conducted emissions.

MARKER  
6.49 MHz  
54.17 dB $\mu$ V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
                  MKR 6.49 MHz  
                  54.17 dB $\mu$ V

REF OFFST 6.0 dB  
LOG REF 85.0 dB $\mu$ V

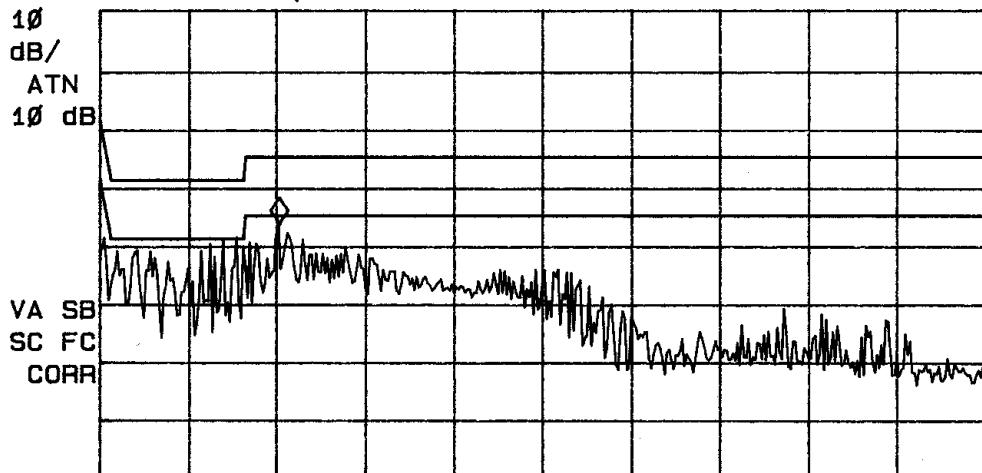


START 150 kHz

#IF BW 9.0  
1 Conducted E  
MARKER  
6.19 MHz  
48.67 dBuV

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 6.19 MHz  
48.67 dB $\mu$ V

REF OFFSET 6.0 dB  
LOG REF 85.0 dBmV



START 150 kHz  
#IF BW 9

AVG BW 30 kHz

STOP 30.00 MHz  
SWP 1.11 sec

Figure 2 Conducted Emissions Line 2.

### ***Radiated EMI***

The EUT was arranged in a typical equipment configuration and operated through all of its various modes. Preliminary testing was performed in a screen room with the EUT positioned 1 meter from the FSM. Radiated emissions measurements were performed to identify the frequencies, which produced the highest emissions. Plots were made of the frequency spectrum from 30 MHz to 22,000 MHz for the preliminary testing. Refer to figures three through seven for plots of the radiated emissions spectrum taken in a screen room. The highest radiated emission was then re-maximized at the OATS location before final radiated emissions measurements were performed. Final data was taken with the EUT located at the OATS at a distance of 3 meters between the EUT and the receiving antenna. The frequency spectrum from 30 MHz to 22,000 MHz was searched for radiated emissions. Measured emission levels were maximized by EUT placement on the table, rotating the turntable through 360 degrees, varying the antenna height between 1 and 4 meters above the ground plane and changing antenna position between horizontal and vertical polarization. Antennas used were Broadband Biconical from 30 to 200 MHz, Biconilog from 30 to 1000 MHz, Log Periodic from 200 MHz to 5 GHz and or, pyramidal horns and mixers from 4 GHz to 40 GHz, notch filters and appropriate amplifiers were utilized.

Sample Calculations:

$$\begin{aligned} \text{RFS} &= \text{Radiated Field Strength} \\ \text{dB}\mu\text{V/m} @ 3m &= \text{dB}\mu\text{V} + \text{A.F.} - \text{Amplifier Gain} \\ \text{dB}\mu\text{V/m} @ 3m &= 56.4 + 8.9 - 30 \\ &= 35.3 \end{aligned}$$

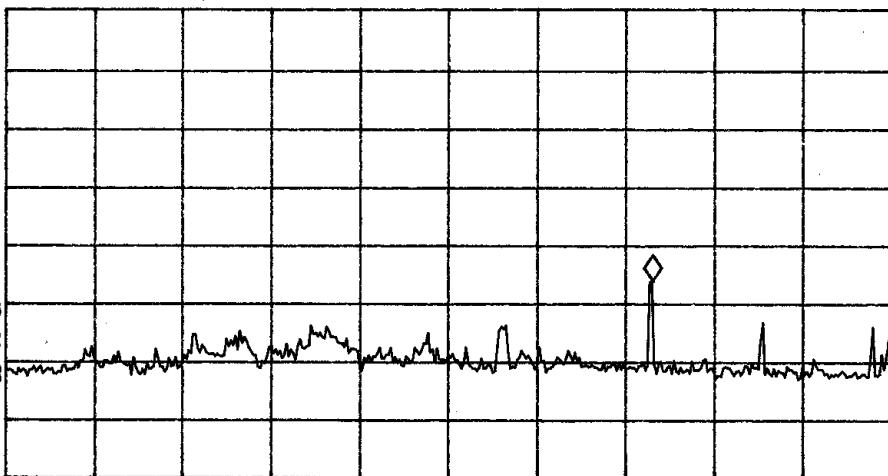
MARKER  
176.0 MHz  
33.74 dB $\mu$ V

ACTV DET: PEAK  
MEAS DET: PEAK QP  
MKR 176.0 MHz  
33.74 dB $\mu$ V

LOG REF 80.0 dB $\mu$ V

10  
dB/  
#ATN  
0 dB

VA SB  
SC FC  
CORR



START 30.0 MHz

#IF BW 120 kHz

AVG BW 300 kHz

STOP 230.0 MHz

SWP 41.7 msec

Figure three Radiated Emissions taken at 1 meter in screen room.

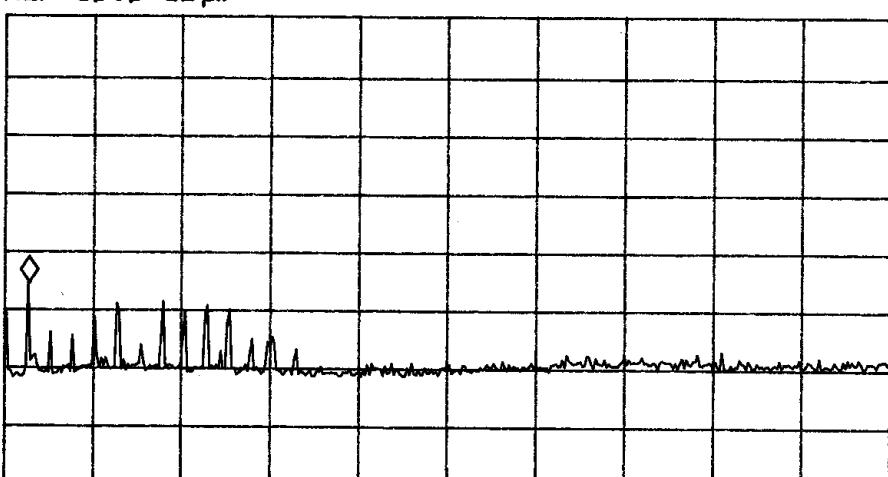
MARKER  
228 MHz  
34.40 dB $\mu$ V

ACTV DET: PEAK  
MEAS DET: PEAK QP  
MKR 228 MHz  
34.40 dB $\mu$ V

LOG REF 80.0 dB $\mu$ V

10  
dB/  
#ATN  
0 dB

VA SB  
SC FC  
CORR



START 200 MHz

#IF BW 120 kHz

AVG BW 300 kHz

STOP 1.200 GHz

SWP 208 msec

Figure four Radiated Emissions taken at 1 meter in screen room.

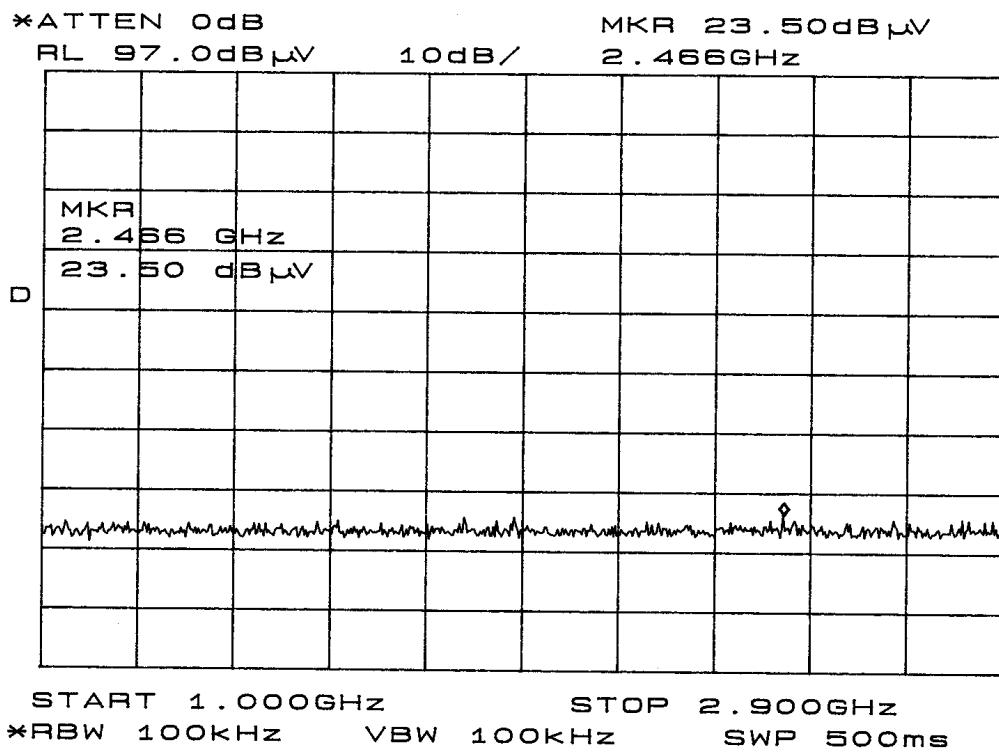


Figure five Radiated Emissions taken at 1 meter in screen room.

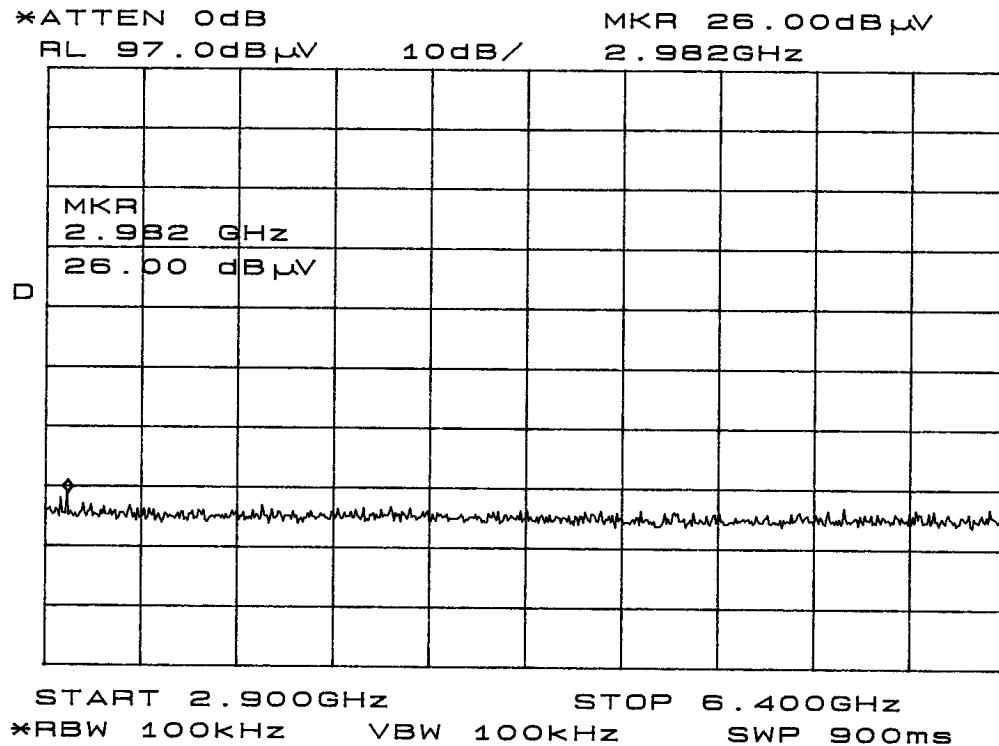


Figure six Radiated Emissions taken at 1 meter in screen room.

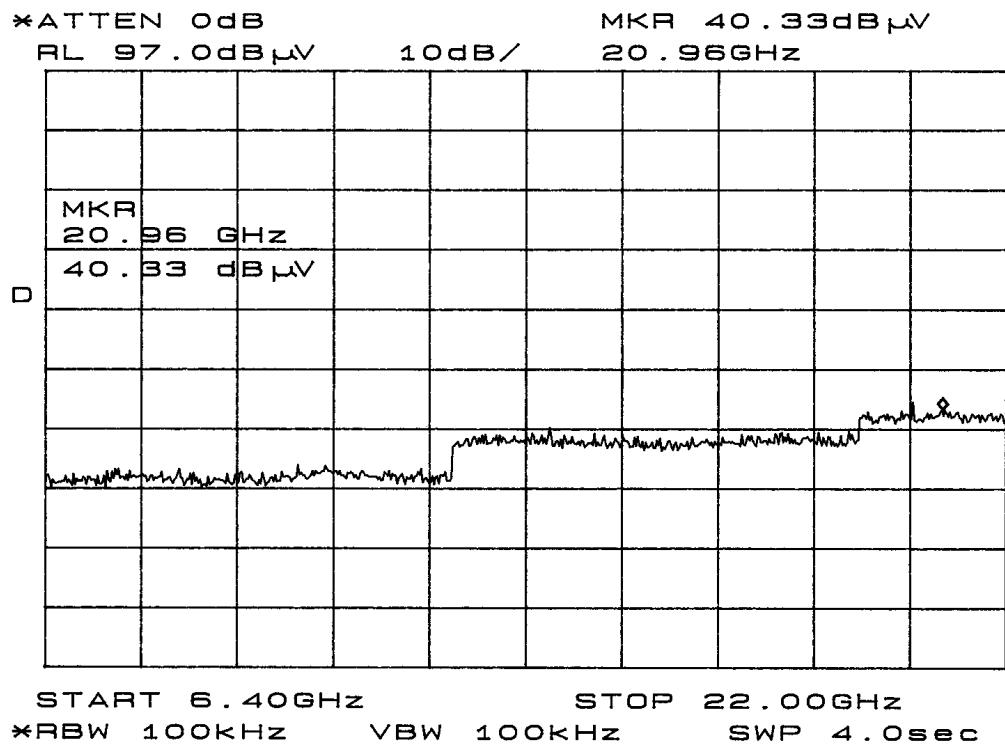


Figure seven Radiated Emissions taken at 1 meter in screen room.

**Data: Conducted Emissions (7 Highest Emissions)**

Frequency band (MHz)	L1 Level (dB $\mu$ V)			L2 Level (dB $\mu$ V)			CISPR 22 Limit Q.P. Ave(dB $\mu$ V)
	Peak	Q.P.	AVE	Peak	Q.P.	AVE	
0.15 – 0.5	49.8	49.1	46.8	50.3	49.4	44.7	66 – 56 / 56 - 46
0.5 – 5	47.6	45.9	42.8	46.2	45.0	35.5	56 / 46
5 – 10	54.2	49.6	39.3	51.1	45.9	36.1	60 / 50
10 – 15	45.0	42.9	36.2	43.9	41.3	30.2	60 / 50
15 – 20	38.8	36.5	30.8	43.6	40.9	26.7	60 / 50
20 – 25	37.7	35.9	29.4	36.2	34.4	28.8	60 / 50
25 – 30	38.0	35.1	27.7	35.4	32.1	25.1	60 / 50

Other emissions present had amplitudes at least 10 dB below the limit.

### Data: General Radiated Emissions from EUT (6 Highest Emissions)

Frequency in MHz	FSM Horz. (dB $\mu$ V)	FSM Vert. (dB $\mu$ V)	A.F. (dB/m)	Amp. Gain (dB)	RFS Horz. @ 3m (dB $\mu$ V/m)	RFS Vert. @ 3m (dB $\mu$ V/m)	FCC Class B Limit @ 3m (dB $\mu$ V/m)
175.0	56.4	46.7	8.9	30	35.3	25.6	43.5
200.0	58.2	47.6	10.6	30	38.8	28.2	43.5
225.0	58.9	52.0	11.2	30	40.1	33.2	46.0
250.0	57.5	50.4	12.3	30	39.8	32.7	46.0
375.0	48.0	52.1	15.6	30	33.6	37.7	46.0
425.0	48.7	53.3	16.6	30	35.3	39.9	46.0

Other emissions present had amplitudes at least 20 dB below the limit.

### ***Summary of Results for Conducted Emissions***

The conducted emissions for the EUT meet the requirements for CISPR 22 and FCC Part 15B CLASS B Digital Devices. The EUT had a 10.1 dB (Quasi-Peak) minimum margin below the limit, and a 3.2 dB minimum margin below the CISPR average limit.

Measurements were taken using the peak, quasi peak, and average, measurement function for each emissions amplitude and were below the limits stated in the specification. Other emissions were present with recorded data representing worst-case amplitudes.

### ***Summary of Results for Radiated Emissions***

The general radiated emissions for the EUT meet the requirements for CISPR 22 and FCC Part 15B CLASS B Digital Devices. The EUT had a 4.7 dB minimum margin below the quasi-peak limit. Other emissions were present with amplitudes at least 10 dB below the limit.

***Statement of Modifications and Deviations***

Clamp-on Ferrite beads (Steward PN 28A2025-0A0) were added to the net work cabling to reduce the radiated emission levels. Three beads were added to the system, one at the POE (power over Ethernet) cable connection going to the computer. One bead was attached at the POE cable connection going to the EUT and the other at the EUT end of the same cable. No other modifications to the EUT were required for the unit to meet the CISPR 22 or FCC Part 15B CLASS B emissions standards. There were no deviations or exceptions to the specifications.

## 9) Subpart C - Intentional Radiators

As per CFR Part 15, Subpart C, paragraph 15.247 the following information is submitted.

### ***15.203 Antenna Requirements***

The unit is professionally installed and thus complies with the antenna connection requirements.

The requirements of 15.203 are fulfilled and there are no deviations or exceptions to the specification.

### ***15.205 Restricted Bands of Operation***

Spurious emissions falling in the restricted frequency bands of operation were measured at a distance of three meters at the OATS. The EUT utilizes frequency, determining circuitry, which generates harmonics falling in the restricted bands. Emissions were checked at the OATS, using appropriate antennas or pyramidal horns, amplification stages, and a spectrum analyzer. No other significant emission was observed which fell into the restricted bands of operation.

Sample Calculations:

$$\begin{aligned} \text{RFS (dB}\mu\text{V/m @ 3m)} &= \text{FSM(dB}\mu\text{V)} + \text{A.F.(dB)} - \text{Gain(dB)} \\ &= 57.5 + 12.3 - 30 \\ &= 39.8 \end{aligned}$$

**Data: Emissions in Restricted Bands**

Frequency in MHz	FSM Horz. (dB $\mu$ V)	FSM Vert. (dB $\mu$ V)	A.F. (dB/m)	Amp. Gain (dB)	RFS Horz. @ 3m (dB $\mu$ V/m)	RFS Vert. @ 3m (dB $\mu$ V/m)	FCC Class B Limit @ 3m (dB $\mu$ V/m)
250.0	57.5	50.4	12.3	30	39.8	32.7	46.0
325.0	46.7	37.8	14.6	30	31.3	22.4	46.0
400.0	44.5	49.4	16.5	30	31.0	35.9	46.0
4822.0	16.3	18.0	43.4	20	39.7	41.4	54.0
4874.0	17.2	17.3	43.4	20	40.6	40.7	54.0
4924.0	15.9	16.3	43.4	20	39.3	39.7	54.0
7233.0	21.0	20.0	36.0	20	37.0	36.0	54.0
7311.0	21.0	20.0	36.0	20	37.0	36.0	54.0
7386.0	21.1	20.2	36.0	20	37.1	36.2	54.0
12055.0	20.7	21.1	40.8	20	41.5	41.9	54.0
12185.0	20.6	21.0	40.8	20	41.4	41.8	54.0
12310.0	20.7	21.0	40.8	30	41.5	41.8	54.0
4822.0	17.8	17.8	43.4	20	41.2	41.2	54.0
4874.0	18.0	17.8	43.4	20	41.4	41.2	54.0
4924.0	17.6	17.7	43.4	20	41.0	41.1	54.0
7233.0	16.8	18.0	36.0	20	32.8	34.0	54.0
7311.0	21.0	20.0	36.0	20	37.0	36.0	54.0
7386.0	21.0	20.0	36.0	20	37.0	36.0	54.0
12055.0	18.3	19.0	40.8	20	39.1	39.8	54.0
12185.0	20.7	21.1	40.8	20	41.5	41.9	54.0
12310.0	20.7	21.1	40.8	20	41.5	41.9	54.0

Other emissions present had amplitudes at least 20 dB below the limit.

***Summary of Results for Radiated Emissions in Restricted Bands:***

The radiated emissions for the EUT meet the requirements for FCC Part 15C Intentional Radiators. The EUT had a 6.2 dB minimum margin below the limits. Both average and peak amplitudes were checked for compliance with the regulations. No other emissions were found in the restricted frequency bands. Other emissions were present with amplitudes at least 20 dB below the FCC Limits.

***15.209 Radiated Emissions Limits; General Requirements*****Radiated EMI**

The EUT was arranged in a typical equipment configuration and operated through all of its various modes. Preliminary testing was performed in a screen room with the EUT positioned 1 meter from the FSM. Radiated emissions measurements were performed to identify the frequencies, which produced the highest emissions. Emissions were checked in the screen room from 30 to 24,000 MHz and plots were made of the frequency spectrum from 30 MHz to 24,000 MHz for the preliminary testing. The highest radiated emission was then re-maximized at this location before final radiated emissions measurements were performed. Final data was taken with the EUT located at the open area test site at a distance of 3 meters between the EUT and the receiving antenna. The frequency spectrum from 30 MHz to 24,000 MHz was searched for radiated emissions. Measured emission levels were maximized by EUT placement on the table, rotating the turntable through 360 degrees, varying the antenna height between 1 and 4 meters above the ground plane and changing antenna polarization between horizontal and vertical. Antennas used were Broadband Biconical from 30 MHz to 200 MHz, Biconilog from 30

MHz to 1000 MHz, Log Periodic from 200 MHz to 5 GHz, and/or Pyramidal Horns from 4 GHz to 40 GHz.

Sample Calculations:

RFS = Radiated Field Strength

$\text{dB}\mu\text{V/m} @ 3\text{m} = \text{dB}\mu\text{V} + \text{A.F.} - \text{Amplifier Gain}$

$$\text{dB}\mu\text{V/m} @ 3\text{m} = 56.4 + 8.9 - 30$$

$$= 35.3$$

**Data: General Radiated Emissions from EUT (Highest Emissions)**

Frequency in MHz	FSM Horz. (dB $\mu$ V)	FSM Vert. (dB $\mu$ V)	A.F. (dB/m)	Amp. Gain (dB)	RFS Horz. @ 3m (dB $\mu$ V/m)	RFS Vert. @ 3m (dB $\mu$ V/m)	FCC Class B Limit @ 3m (dB $\mu$ V/m)
175.0	56.4	46.7	8.9	30	35.3	25.6	43.5
200.0	58.2	47.6	10.6	30	38.8	28.2	43.5
225.0	58.9	52.0	11.2	30	40.1	33.2	46.0
250.0	57.5	50.4	12.3	30	39.8	32.7	46.0
375.0	48.0	52.1	15.6	30	33.6	37.7	46.0
425.0	48.7	53.3	16.6	30	35.3	39.9	46.0

Other emissions present had amplitudes at least 20 dB below the limit.

**Summary of Results for Radiated Emissions:**

The radiated emissions for the EUT meet the requirements for FCC Part 15C Intentional Radiators. The EUT had a 4.7 dB minimum margin below the limits. Other emissions were present with amplitudes at least 10 dB below the FCC Limits.

### 15.247 Operation in the Band 2400-2483.5 MHz

The power output was measured both at the antenna connection and at the open area test site at a three-meter distance. Data was taken per Paragraph 2.1046(a) and 15.247. Figure eight demonstrates compliance with band edge operation requirements of 15.247(a)(2). Figure nine demonstrates compliance with the minimum 6 db bandwidth requirements of 15.247(A)(2). Figure ten demonstrates compliance with 15.247(b)(3)(I) maximum output power. Figure eleven through thirteen demonstrate compliance with the requirements of 15.247(c) for emission limitations. Six antenna configurations were tested for compliance ranging in gain from 12 dBi to 24 dBi with worst case emissions presented in this document.

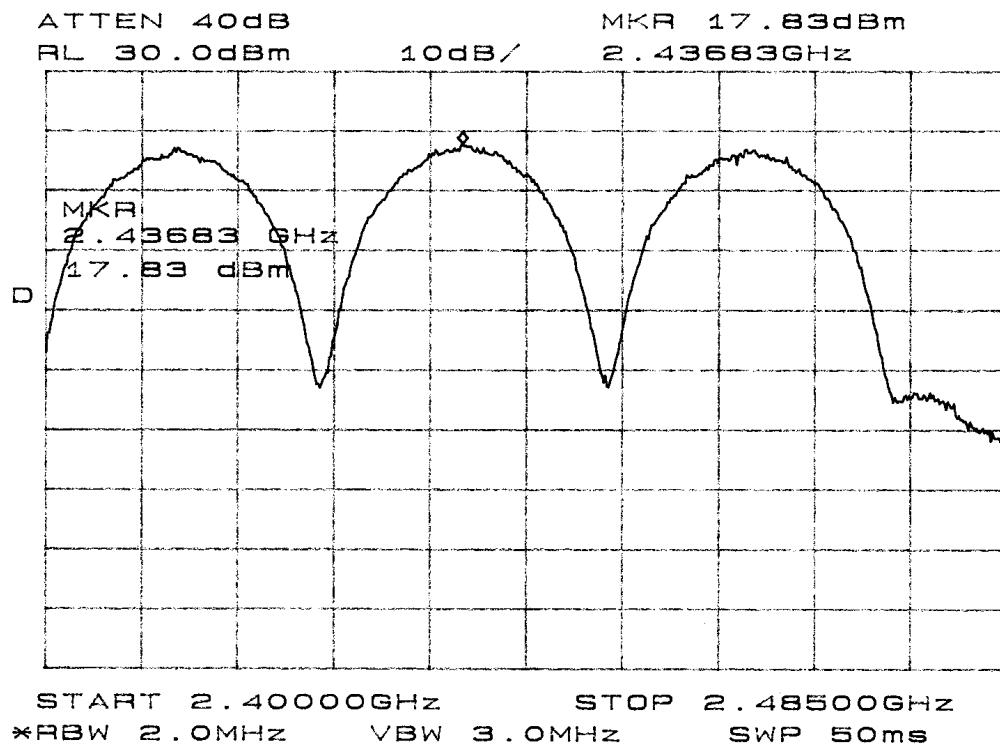


Figure 8 band edge plot taken in screen room.

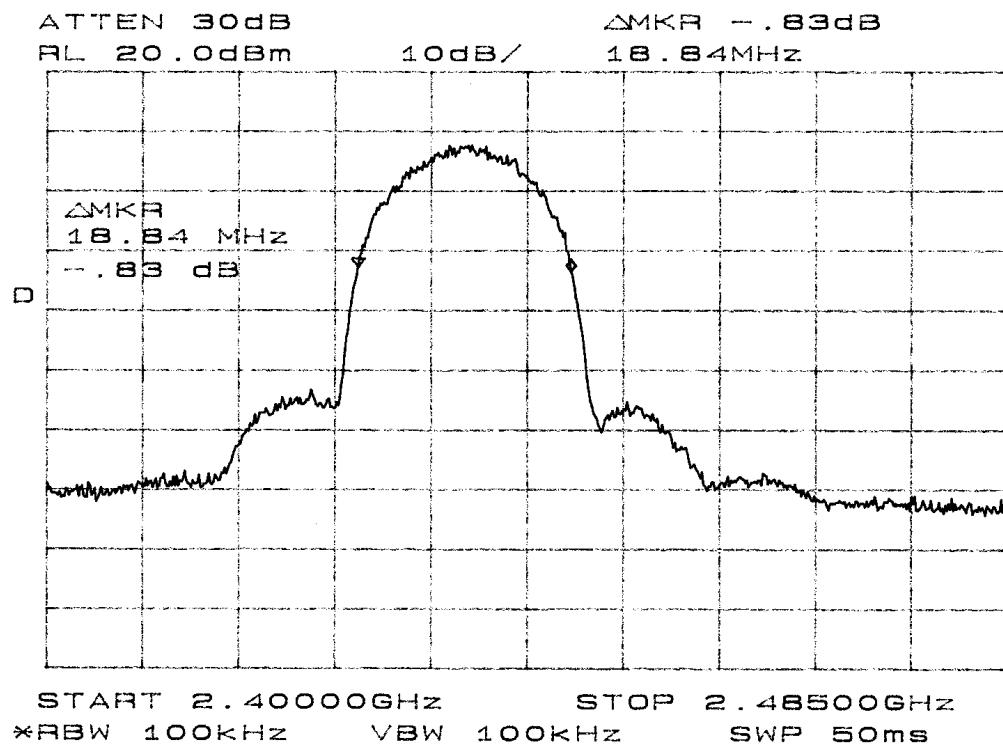


Figure 9 Band width plot taken in screen room.

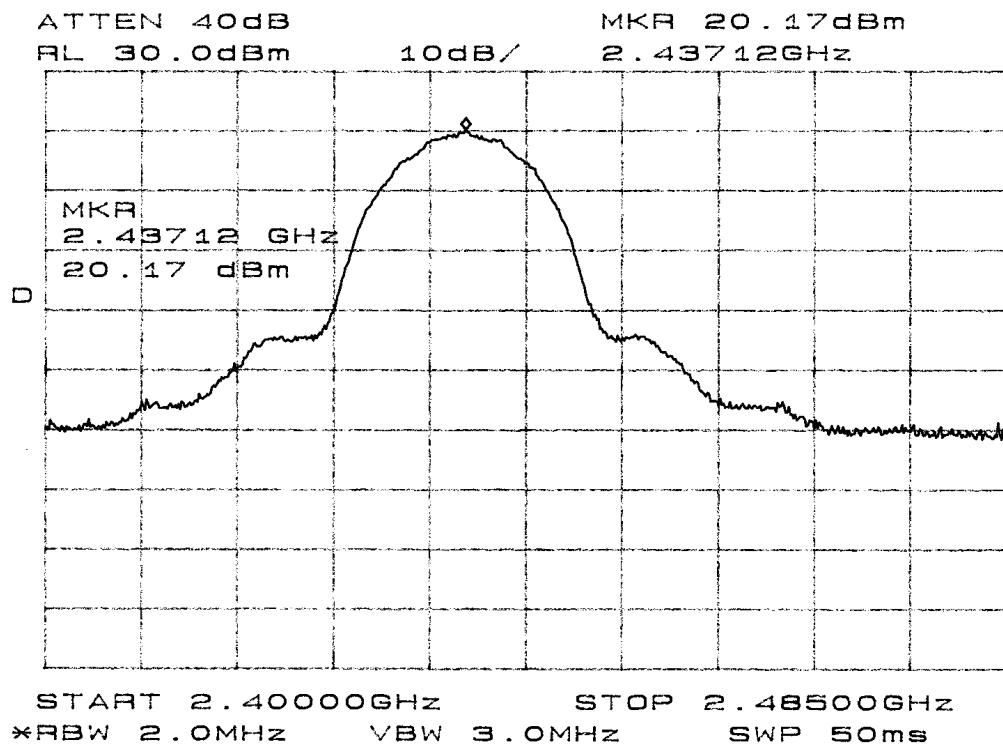


Figure 10 maximum output power plot taken in screen room.

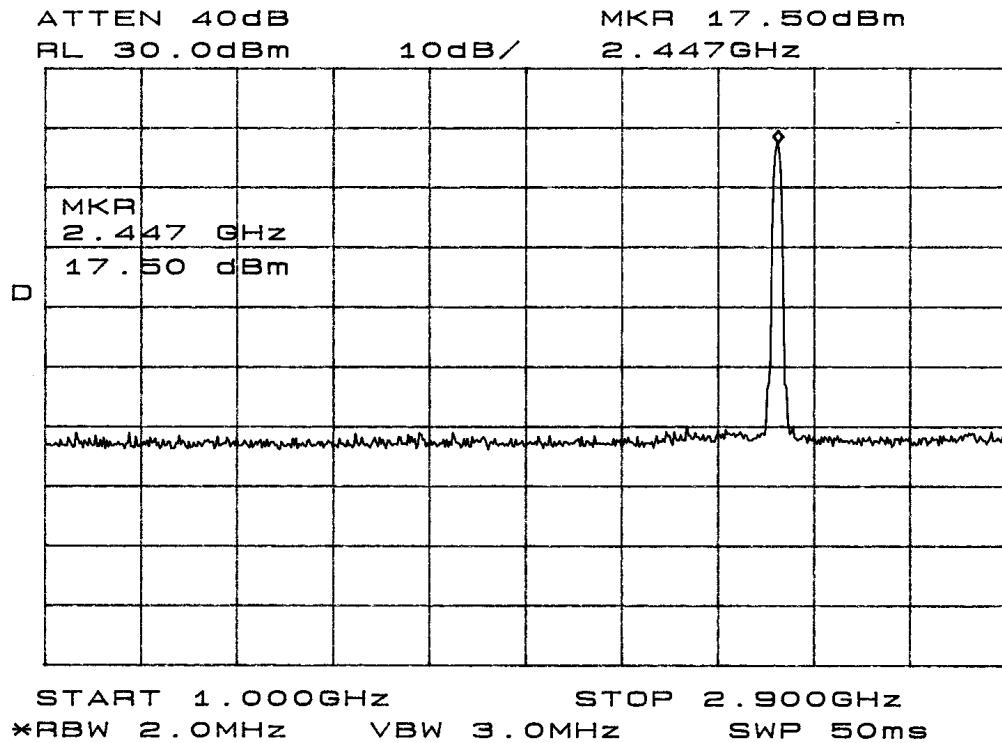


Figure 11 Antenna Emission plot taken in screen room.

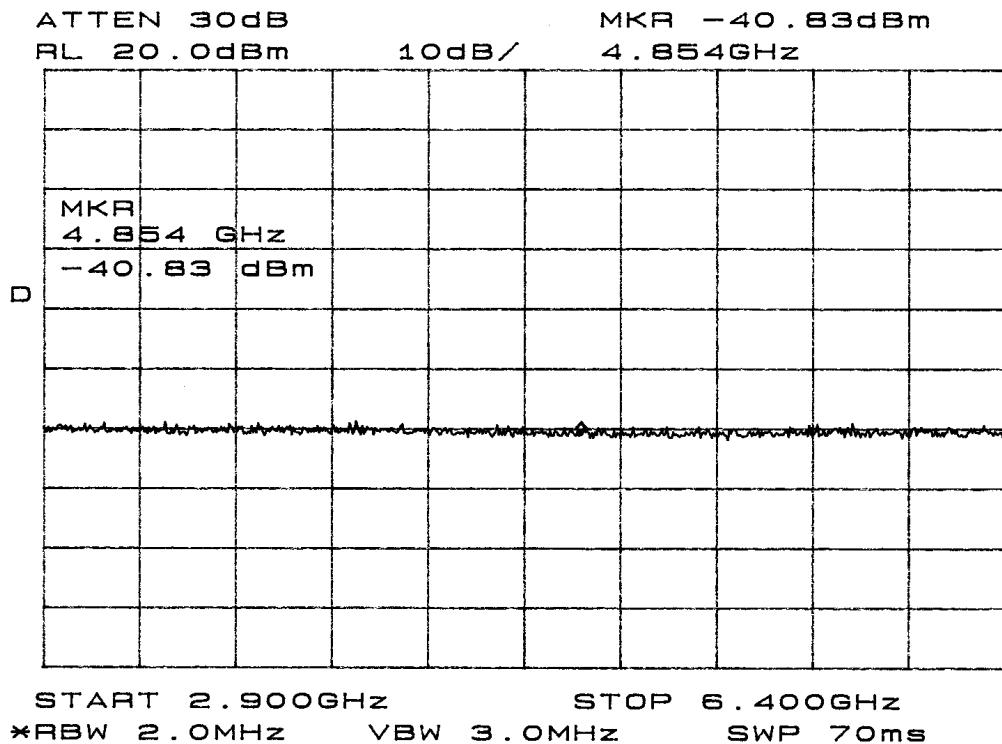


Figure 12 Antenna Emission plot taken in screen room.

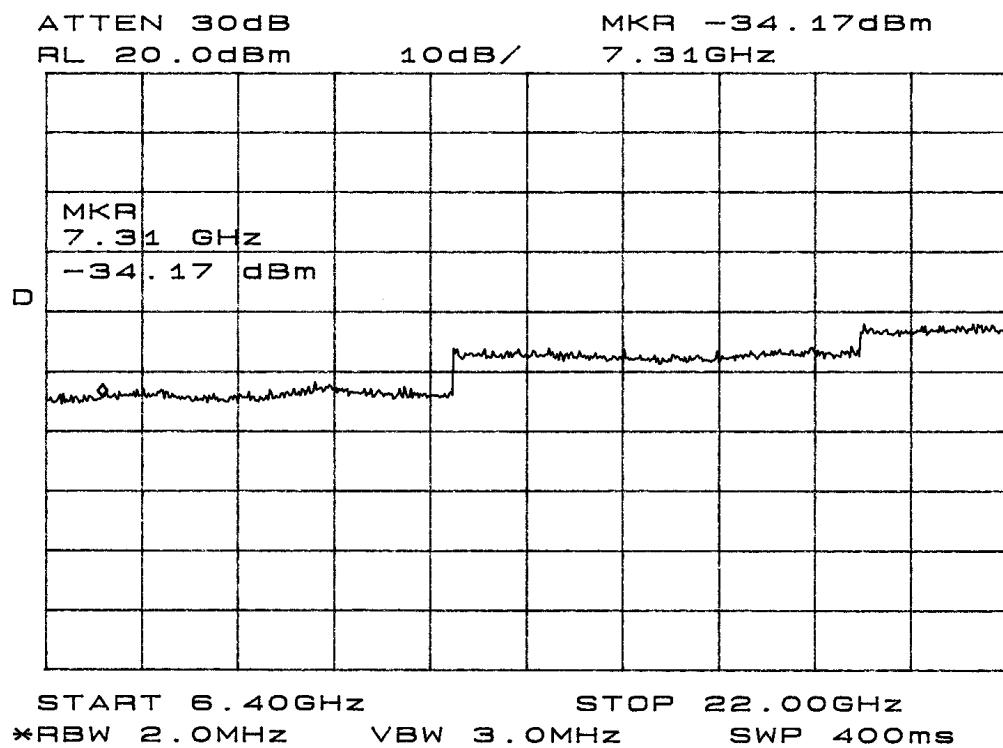


Figure 13 Antenna Emission plot taken in screen room.

**Data: Radiated Emissions from Intentional Radiator using 12 dBi antenna**

Emission Frequency (MHz)	FSM Horz. (dB $\mu$ V)	FSM Vert. (dB $\mu$ V)	Ant. Factor (dB)	Amp Gain (dB)	RFS Horz. @ 3m (dB $\mu$ V/m)	RFS Vert. @ 3m (dB $\mu$ V/m)	Limit @ 3m (dB $\mu$ V/m)
2411.0	79.8	87.3	33.9	-5	118.7	126.2	
4822.0	16.3	18.0	43.4	20	39.7	41.4	54.0
7233.0	21.0	20.0	36.0	20	37.0	36.0	54.0
9644.0	20.1	21.3	38.1	20	38.2	39.4	54.0
12055.0	20.7	21.1	40.8	20	41.5	41.9	54.0
2437.0	79.8	88.0	33.9	-5	118.7	126.9	
4874.0	17.2	17.3	43.4	20	40.6	40.7	54.0
7311.0	21.0	20.0	36.0	20	37.0	36.0	54.0
9748.0	20.1	21.3	38.1	20	38.2	39.4	54.0
12185.0	20.6	21.0	40.8	20	41.4	41.8	54.0
2462.0	80.2	87.5	33.9	-5	119.1	126.4	
4924.0	15.9	16.3	43.4	20	39.3	39.7	54.0
7386.0	21.1	20.2	36.0	20	37.1	36.2	54.0
9848.0	20.2	21.4	38.1	20	38.3	39.5	54.0
12310.0	20.7	21.0	40.8	30	41.5	41.8	54.0

**Data: Radiated Emissions from Intentional Radiator using 24 dBi antenna**

Emission Frequency (MHz)	FSM Horz. (dB $\mu$ V)	FSM Vert. (dB $\mu$ V)	Ant. Factor (dB)	Amp Gain (dB)	RFS Horz. @ 3m (dB $\mu$ V/m)	RFS Vert. @ 3m (dB $\mu$ V/m)	Limit @ 3m (dB $\mu$ V/m)
2411.0	88.5	99.3	33.9	-5	127.4	138.2	
4822.0	17.8	17.8	43.4	20	41.2	41.2	54.0
7233.0	16.8	18.0	36.0	20	32.8	34.0	54.0
9644.0	15.5	17.5	38.1	20	33.6	35.6	54.0
12055.0	18.3	19.0	40.8	20	39.1	39.8	54.0
2437.0	90.0	100.3	33.9	-5	128.9	139.2	
4874.0	18.0	17.8	43.4	20	41.4	41.2	54.0
7311.0	21.0	20.0	36.0	20	37.0	36.0	54.0
9748.0	20.1	21.3	38.1	20	38.2	39.4	54.0
12185.0	20.7	21.1	40.8	20	41.5	41.9	54.0
2462.0	89.3	99.0	33.9	-5	128.2	137.9	
4924.0	17.6	17.7	43.4	20	41.0	41.1	54.0
7386.0	21.0	20.0	36.0	20	37.0	36.0	54.0
9848.0	20.1	21.3	38.1	20	38.2	39.4	54.0
12310.0	20.7	21.1	40.8	20	41.5	41.9	54.0

ROGERS LABS, INC.

4405 W. 259th Terrace

Louisburg, KS 66053

Phone/Fax: (913) 837-3214

E-Zy.net

MODEL: EZ09

Test #: 050513

Test to: FCC Parts 2 and 15c (15.24)

FCC ID#: R5A EZ09

EZYnet R5AEZ09 TstRpt.doc 6/15/2005

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***Summary of Results for Radiated Emissions of Intentional Radiator***

The EUT had the highest emission of 139.2 dBmV/m at 3 meters at the fundamental frequency of operation. The EUT had a worst-case of 12.1 dB margin below the limit for the harmonic emissions. The radiated emissions for the EUT meet the requirements for FCC Part 15.247 Intentional Radiators. There are no measurable emissions in the restricted bands other than those recorded in this report. Other emissions were present with amplitudes at least 20 dB below the FCC Limits. The specifications of 15.247 were met; there are no deviations or exceptions to the requirements.

***Statement of Modifications and Deviations***

Clamp-on Ferrite beads (Steward PN 28A2025-0A0) were added to the net work cabling to reduce the radiated emission levels. Three beads were added to the system, one at the POE (power over Ethernet) cable connection going to the computer. One bead was attached at the POE cable connection going to the EUT and the other at the EUT end of the same cable. No other modifications to the EUT were required for the unit to meet the FCC Part 15C emissions standards. There were no deviations to the specifications.

## APPENDIX

### Model: EZ09 DATA TRANSMITTER

1. Test Equipment List
2. Rogers Qualifications
3. FCC Site Approval Letter

## TEST EQUIPMENT LIST FOR ROGERS LABS, INC.

The test equipment used is maintained in calibration and good operating condition. Use of this calibrated equipment ensures measurements are traceable to national standards.

<u>List of Test Equipment:</u>	<u>Calibration Date:</u>
Scope: Tektronix 2230	2/05
Wattmeter: Bird 43 with Load Bird 8085	2/05
Power Supplies: Sorensen SRL 20-25, SRL 40-25, DCR 150, DCR 140	2/05
H/V Power Supply: Fluke Model: 408B (SN: 573)	2/05
R.F. Generator: HP 606A	2/05
R.F. Generator: HP 8614A	2/05
R.F. Generator: HP 8640B	2/05
Spectrum Analyzer: HP 8562A,	2/05
Mixers: 11517A, 11970A, 11970K, 11970U, 11970V, 11970W	
HP Adapters: 11518, 11519, 11520	
Spectrum Analyzer: HP 8591 EM	5/05
Frequency Counter: Leader LDC 825	2/05
Antenna: EMCO Biconilog Model: 3143	5/05
Antenna: EMCO Log Periodic Model: 3147	10/04
Antenna: Antenna Research Biconical Model: BCD 235	10/04
Antenna: EMCO Dipole Set 3121C	2/05
Antenna: C.D. B-101	2/05
Antenna: Solar 9229-1 & 9230-1	2/05
Antenna: EMCO 6509	2/05
Audio Oscillator: H.P. 201CD	2/05
R.F. Power Amp 65W Model: 470-A-1010	2/05
R.F. Power Amp 50W M185- 10-501	2/05
R.F. PreAmp CPPA-102	2/05
LISN 50 $\mu$ Hy/50 ohm/0.1 $\mu$ f	10/04
LISN Compliance Eng. 240/20	2/05
Peavey Power Amp Model: IPS 801	2/05
Power Amp A.R. Model: 10W 1010M7	2/05
Power Amp EIN Model: A301	2/05
ELGAR Model: 1751	2/05
ELGAR Model: TG 704A-3D	2/05
ESD Test Set 2010i	2/05
Fast Transient Burst Generator Model: EFT/B-101	2/05
Current Probe: Singer CP-105	2/05
Current Probe: Solar 9108-1N	2/05
Field Intensity Meter: EFM-018	2/05
KEYTEK Ecat Surge Generator	2/05
Shielded Room 5 M x 3 M x 3.0 M (101 dB Integrity)	

5/3/2005

**QUALIFICATIONS**  
of  
**SCOT D. ROGERS, ENGINEER**  
**ROGERS LABS, INC.**

Mr. Rogers has approximately 17 years experience in the field of electronics. Six years working in the automated controls industry and 6 years working with the design, development and testing of radio communications and electronic equipment.

**POSITIONS HELD:**

Systems Engineer:	A/C Controls Mfg. Co., Inc. 6 Years
Electrical Engineer:	Rogers Consulting Labs, Inc. 5 Years
Electrical Engineer:	Rogers Labs, Inc. Current

**EDUCATIONAL BACKGROUND:**

- 1) Bachelor of Science Degree in Electrical Engineering from Kansas State University.
- 2) Bachelor of Science Degree in Business Administration  
Kansas State University.
- 3) Several Specialized Training courses and seminars pertaining to Microprocessors and Software programming.

*Scot D Rogers*  
Scot D. Rogers

May 13, 2005  
Date

1/11/03

**FEDERAL COMMUNICATIONS COMMISSION**

**Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046**

August 15, 2003

Registration Number: 90910

**Rogers Labs, Inc.  
4405 West 259th Terrace  
Louisburg, KS 66053**

**Attention: Scot Rogers**

**Re: Measurement facility located at Louisburg  
3 & 10 meter site  
Date of Renewal: August 15, 2003**

**Dear Sir or Madam:**

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,  
  
Ms. Phyllis Parrish  
Information Technician