

**Axlon Electronics Corp.
FCC Part 15, Certification Application
PLB-01**

April 25, 2001

MEASUREMENT/TECHNICAL REPORT

COMPANY NAME: **Axon Electronics Corp.**

MODEL: **PLB-01**

FCC ID: **NYM-PLB-01**

DATE: **April 25, 2001**

This report concerns (check one): Original grant
Class II change_____

Equipment type: _____

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes _____ No

If yes, defer until: _____
date

N.A. agrees to notify the Commission by N.A.
date

of the intended date of announcement of the product so that the grant can be issued
on that date.

Report prepared by:

United States Technologies, Inc.
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
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TABLE OF CONTENTS

AGENCY AGREEMENT

SECTION 1

GENERAL INFORMATION

- 1.1 Product Description
- 1.2 Related Submittal(s)

SECTION 2

TESTS AND MEASUREMENTS

- 2.1 Configuration of Tested EUT
- 2.2 Test Facility
- 2.3 Test Equipment
- 2.4 Modifications
- 2.5 Test Procedure and Results
- 2.6 Antenna Description
- 2.7 Peak Power (Antenna Conducted at Antenna Terminal)
- 2.8 Antenna Conducted Spurious Emissions
- 2.9 Peak Radiated Spurious Emissions
- 2.10 Average Radiated Spurious Emissions
- 2.11 Minimum 6 dB Bandwidth
- 2.12 Power Spectral Density
- 2.13 Processing Gain
- 2.14 Power Line Conducted Emissions for Transmitter

SECTION 3

LABELING INFORMATION

SECTION 4

BLOCK DIAGRAM(S)/ SCHEMATIC(S)

SECTION 5

PHOTOGRAPHS

SECTION 6

USER'S MANUAL

LIST OF FIGURES AND TABLES

-) Test Configuration
- 2) Photograph(s) for Spurious and Digital Device Emissions
- 3) Peak Power Output
- 4) Antenna Conducted Spurious Emissions
- 5) Peak Radiated Spurious Emissions
- 6) Average Radiated Spurious Emissions
- 7) Minimum 6 dB Bandwidth
- 8) Power Spectral Density

TABLES

- 1) EUT and Peripherals
- 2) Test Instruments
- 3) Peak Power Output
- 4) Peak Radiated Spurious Emissions
- 5) Average Radiated Spurious Emissions
- 6) Power Spectral Density
- 7) Conducted Emissions Data (Transmitter)
- 8) Radiated Emissions Data (Digital Device)
- Conducted Emissions Data (Digital Device)

SECTION 1

GENERAL INFORMATION

GENERAL INFORMATION

1.1 Product Description

The Equipment Under Test (EUT) is a Axlon Electronics Corp., Model PLB-01. The EUT is a 900 MHz Direct Sequence Spread Spectrum base unit and is part of the Palm Pal-lite home automation system. The system, with all of its resources provides a powerful and convenient control interface between the user and a wide range of automated systems such as security, lighting, HVAC, or personal computer. The EUT is a used in this system as the central control unit used to deliver or exchange information, control, and voice communication among all the devices and provides connection to the telephone line.

The EUT has two built in transceivers, one of which is used strictly for voice, the other for data applications. The transceivers are designed to operate on the following frequencies:

Data Transceiver

Channel	Frequency (MHz)
1	905.728
2	907.776
3	909.824

Voice Transceiver

Channel	Frequency (MHz)
1	905.728
2	907.776
3	909.824
4	911.872
5	913.920
6	915.968
7	918.016
8	920.064
9	922.112
10	924.160

1.2 Related Submittal(s)/Grant(s)

The EUT will be used with part of a system to send/receive data. The transceiver presented in this report will be used with another transceiver which has been submitted under FCC ID: NYM-PLM-01.

The EUT is subject to the following authorizations:

- a) Certification as a transmitter
- b) Certification or DoC as a computer interface device and digital device
- b) Verification as a receiver

The information contained in this report is presented for the certification portion of the EUT as a transmitter. A separate report has been generated for the DoC and verification authorizations for the EUT as a computer interface device and receiver.

SECTION 2

TESTS AND MEASUREMENTS

TEST AND MEASUREMENTS

2.1 Configuration of Tested System

The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992). Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. Interconnecting cables were manipulated as necessary to maximize emissions. A block diagram of the tested system is shown in Figure 1. Test configuration photographs for spurious and fundamental emissions are shown in Figure 2.

The sample used for testing was received by U.S. Technologies on October 29, 1999 in good condition.

2.2 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and submitted to the FCC, and accepted in their letter marked 31040/SIT. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number IC2982.

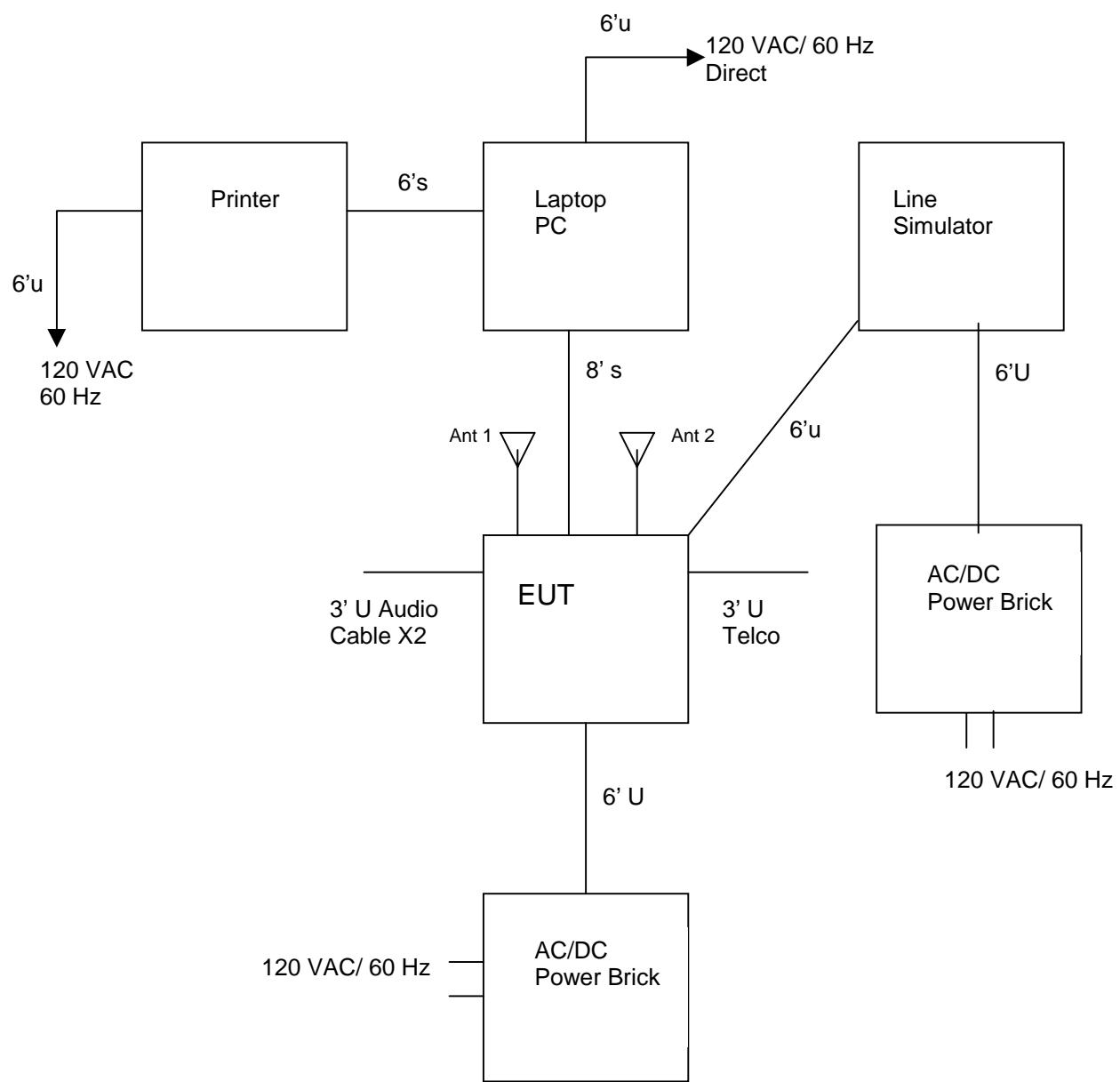
2.3 Test Equipment

Table 2 describes test equipment used to evaluate this product.

2.4 Modifications

No modifications were made by US Tech, to bring the EUT into compliance with FCC Part 15 limits for the transmitter portion of the EUT.

FIGURE 1
TEST CONFIGURATION



Test Date: December 4, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

FIGURE 2a

Photograph(s) for Spurious and Fundamental Emissions (Front)



Test Date: December 4, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

FIGURE 2b

Photograph(s) for Spurious and Fundamental Emissions (Back)



Test Date: December 4, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

FIGURE 2c

Photograph(s) for Digital Device Emissions (Front)



Test Date: December 4, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

FIGURE 2d

Photograph(s) for Digital Device Emissions (Back)



Test Date: December 4, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

FIGURE 2e

Photograph(s) for Digital Device Conducted Emissions



TABLE 1
EUT and Peripherals

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
EUT Axlon Electronics Corporation	Palm Pal Lite PLB-01 Base Unit	None	NYM-PLB-01 (Pending)	8's 2@ 3' U Audio Cable 3' U Telco Cable Antenna 1 Antenna 2
Printer Panasonic	KX-P1180	None	AJC526KX-P1180	6's 6'u 120 VAC 60 Hz
Laptop PC Toshiba	Satellite Pro T2155CDS	None		6' U 120 VAC 60 Hz Direct
Line Simulator Teltone	TLS-3	None	None	6' U
AC/DC Power Brick AVLT	P48-240500-A000C	None	None	6' U 120 VAC 60 Hz
AC/DC Power Brick PhiHong	PSCIDA-050	None	None	6' U 120 VAC 60 Hz

TABLE 2
TEST INSTRUMENTS

TYPE	MANUFACTURER	MODEL	SN.
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	3205A00124
SPECTRUM ANALYZER	HEWLETT-PACKARD	8558B	2332A09900
S A DISPLAY	HEWLETT-PACKARD	853A	2404A02387
COMB GENERATOR	HEWLETT-PACKARD	8406A	1632A01519
RF PREAMP	HEWLETT-PACKARD	8447D	1937A03355
RF PREAMP	HEWLETT-PACKARD	8449B	3008A00480
HORN ANTENNA	EMCO	3115	3723
BICONICAL ANTENNA	EMCO	3110	9307-1431
LOG PERIODIC ANTENNA	EMCO	3146	9110-3600
LISN	SOLAR ELE.	8012	865577
LISN	SOLAR ELE.	8028	910494
LISN	SOLAR ELE.	8028	910495
THERMOMETER	FLUKE	52	5215250
MULTIMETER	FLUKE	85	53710469
FUNCTION GENERATOR	TEKTRONIX	CFG250	CFG250TW15059
PLOTTER	HEWLETT-PACKARD	7475A	2325A65394

2.6 Antenna Description (Paragraph 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 Model Axlon Electronics Corp. PLB-01 incorporates an external antenna.

Manufacturer: Joymax Electronic Corp
17 Hsin-Jung Rd.
Ping-Chen
Tao-Yuan, Taiwan, R.O.C

Type: ½ wave fixed rubber

Model Number: GM-161T-136

Gain: 2 dBi

Connector: TNC Male (Reverse Thread)

(Please refer to the following descriptions provided by Axlon Electronics Corp.).

SPECIFICATION

GENERAL

1. DESCRIPTION :1/2 λ ,90° Fixed type.Rubber Antenna
2. CUSTOMER : AXLON ELECTRONICS CORPORATION
3. MODEL NO : GM-161T-136

ELECTRICAL CHARACTERISTICS

1. FREQUENCY : 902-928 MHz
2. IMPEDANCE : 50 Ohms nominal
3. S.W.R. : Less than 1.6:1
4. GAIN : 2dB
5. ADMITTED POWER RADIATION : 10W
6. TYPE OF RADIATION : Toroidal
7. POLARIZATION : Vertical
8. ELECTRICAL LENGTH : 1/2 λ

MECHANICAL CHARACTERISTICS

1. APPEARANCE/DIMENSION :See fig.1
2. CONNECTOR TYPE :TNC(Male)-revers thread.
3. FLEXIBILITY :If shall be possible to bend the whip round a rod (diameter:80)without remaining derormaion.See fig 2
- 3.BENDING TEST :No damage after 1000 cycles See fig.3

ENVIRONMENT CHARACTERISTICS

1. OPERATING TEMPERATURE RANGE:20° C~+65° C.
2. STORAGE TEMPERATURE RANGE : -30° C~+75° C.



士敏科技事業有限公司
JOYMAX ELECTRONIC CORP.

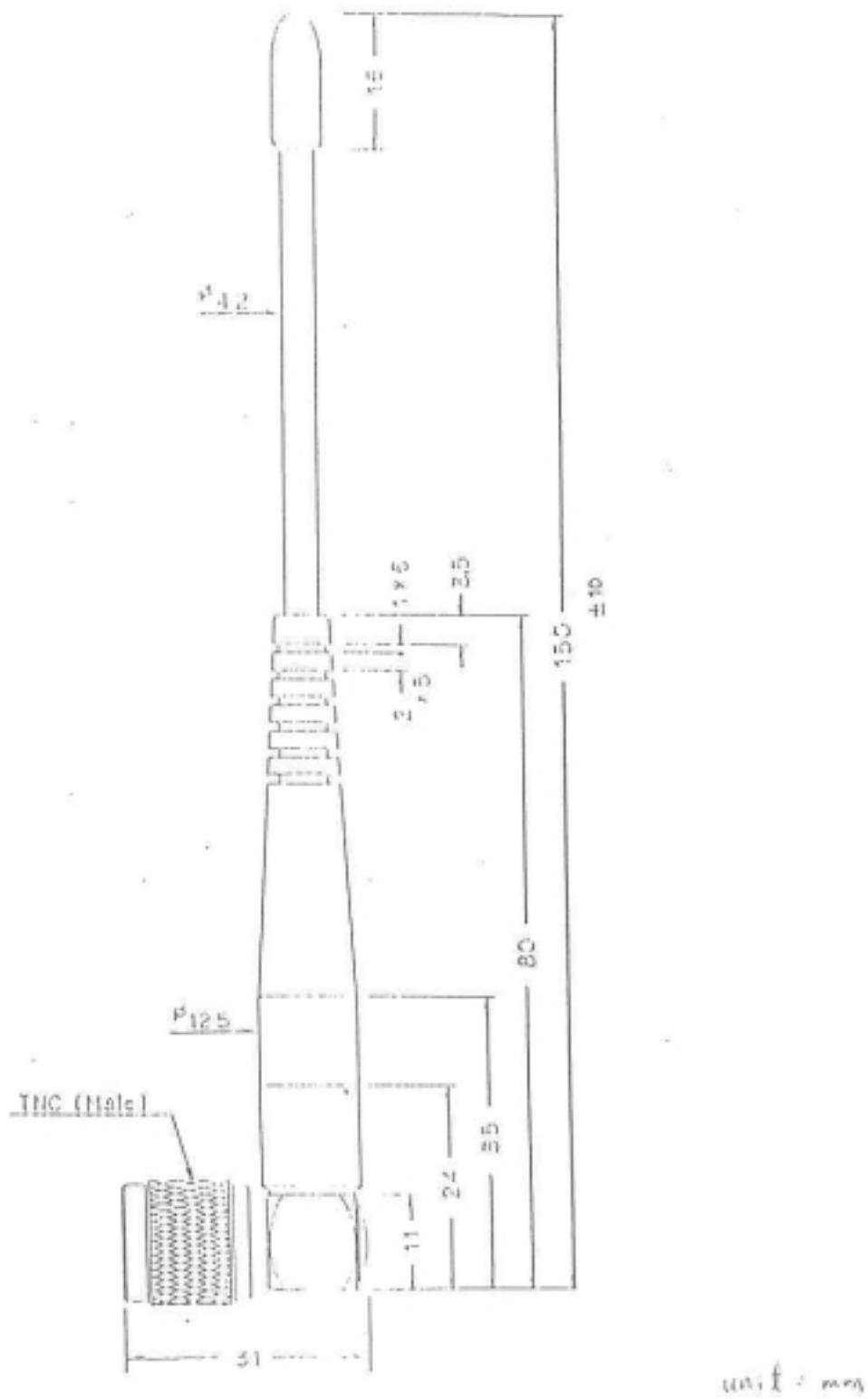


FIG. 1 APPEARANCE/DIMENSION

2.7 Peak Power Within the Band 902 - 928 MHz per FCC Section 15.247(b)

Peak power within the band 902 - 928 MHz has been measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable to the antenna output terminals or across the antenna leads on the PCB as specified by the manufacturer. The spectrum analyzer was set for a 50Ω impedance with the $\text{VBW} \geq \text{RBW}$ 6 dB bandwidth. The results of the measurements are given in Table 3 and Figure 3a through Figure 3f.

The EUT did not incorporate any antennas of directional gain greater than 6 dBi, therefore the output power has not been reduced as required by 15.247(b)(3).

TABLE 3a
PEAK POWER OUTPUT

Test Date: December 17, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

Data Transceiver

Frequency of Fundamental (MHz)	Measurement (dBm)*	Measurement (Watt)*	FCC Limit (Watt)
905.730	12.58	18.1	1.0
907.130	11.72	14.9	1.0
909.820	11.34	13.6	1.0

* Measurement cable loss was unknown but considered minimal

Tester

Signature: _____ Name: Tim R. Johnson

TABLE 3b
PEAK POWER OUTPUT

Test Date: December 17, 1999
UST Project: 99-769
Customer: Axlon Electronics Corp.
Model: PLB-01

Analog Transceiver

Frequency of Fundamental (MHz)	Measurement (dBm)*	Measurement (Watt)*	FCC Limit (Watt)
905.730	19.18	82.8	1.0
913.870	15.04	31.9	1.0
924.160	12.95	19.7	1.0

* Measurement cable loss was unknown but considered minimal

Tester

Signature: _____ Name: Tim R. Johnson

Figure 3a.
Peak Power per FCC Section 15.247(b) (Data) Low

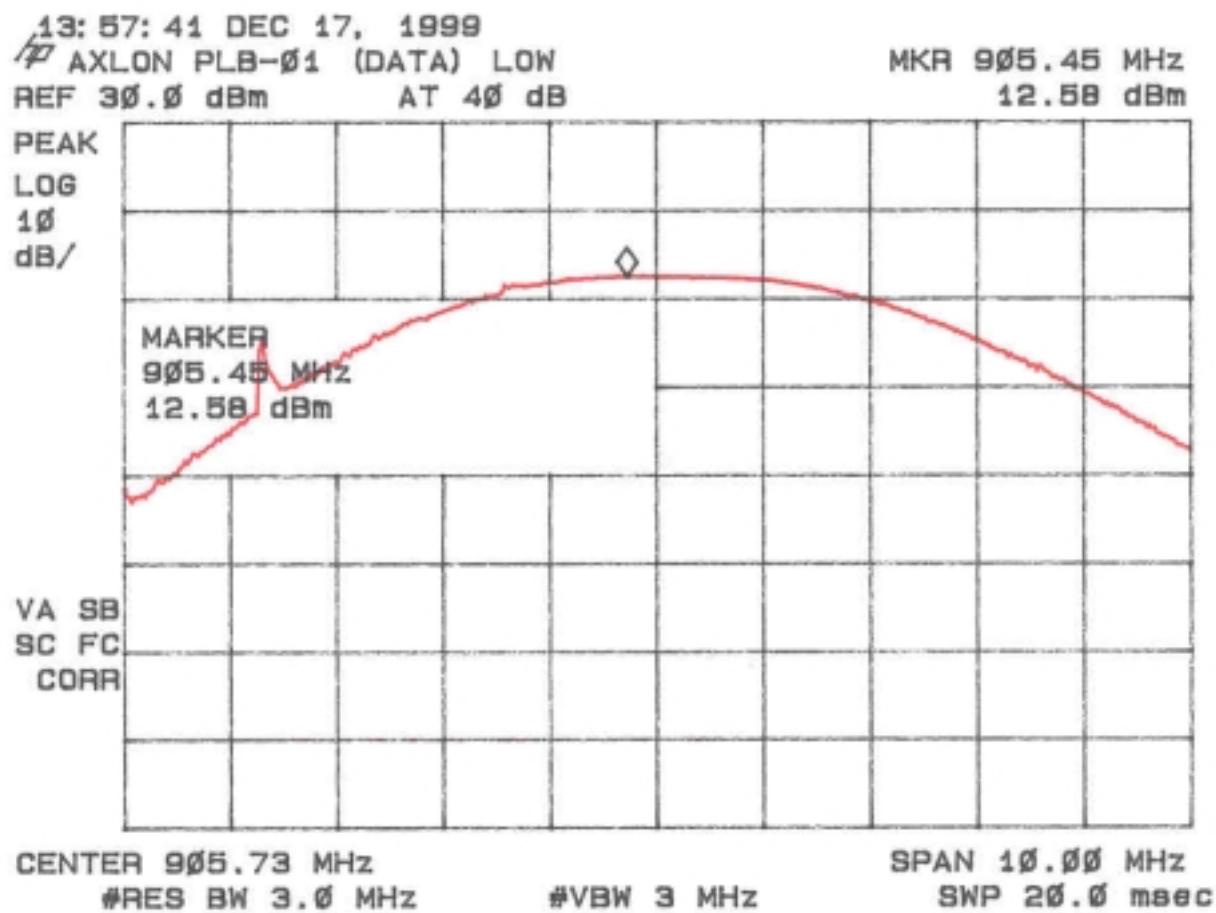


Figure 3b.
Peak Power per FCC Section 15.247(b) (Data) Mid

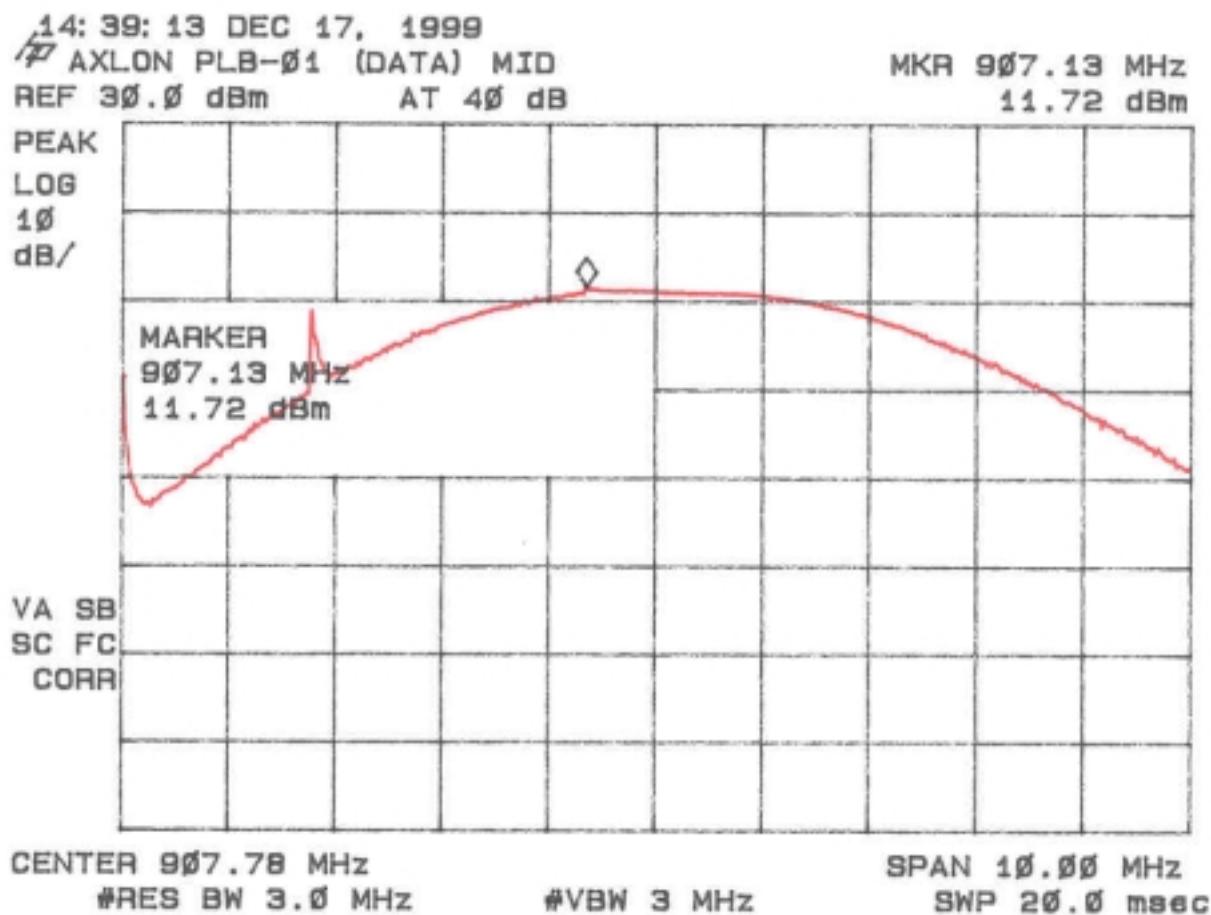


Figure 3c.
Peak Power per FCC Section 15.247(b) (Data) High

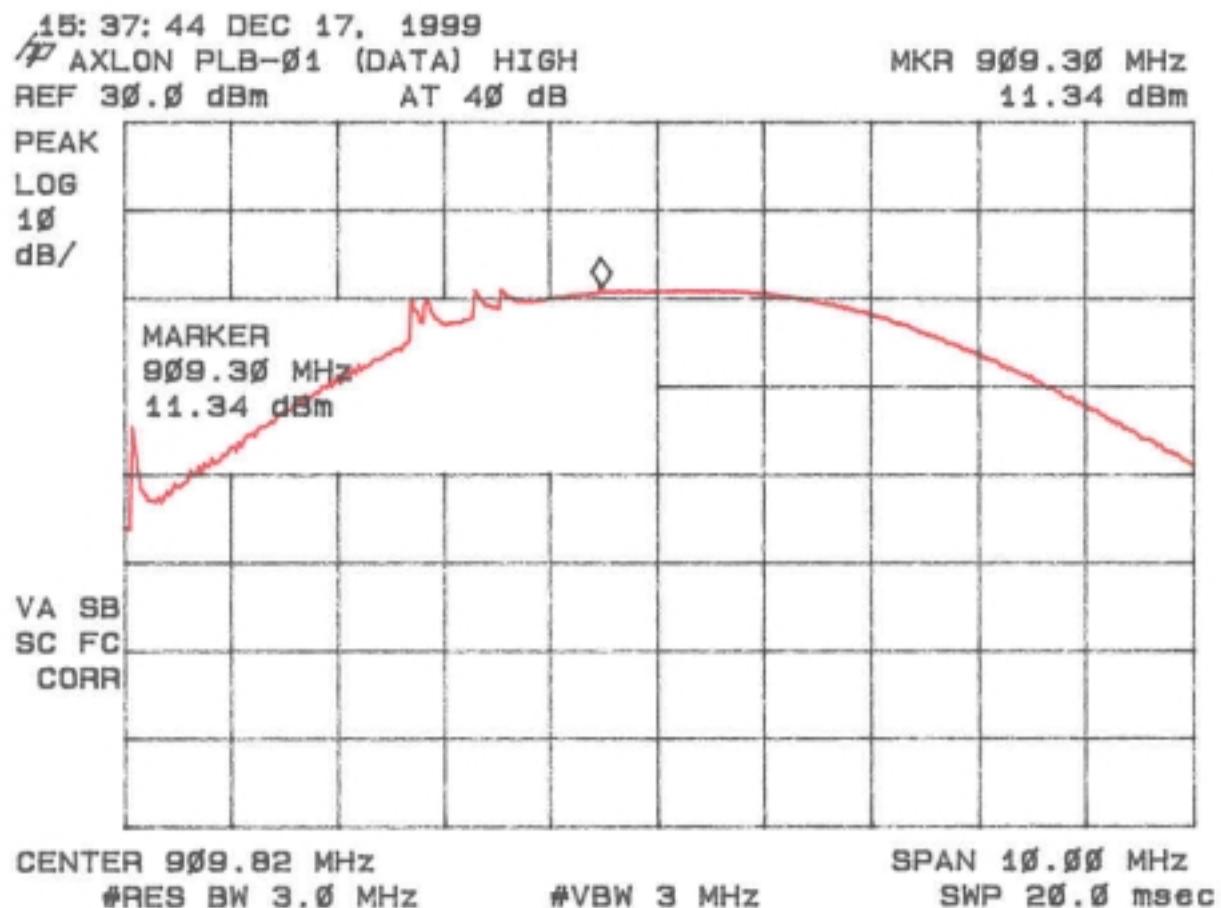


Figure 3d.
Peak Power per FCC Section 15.247(b) (Voice) Low

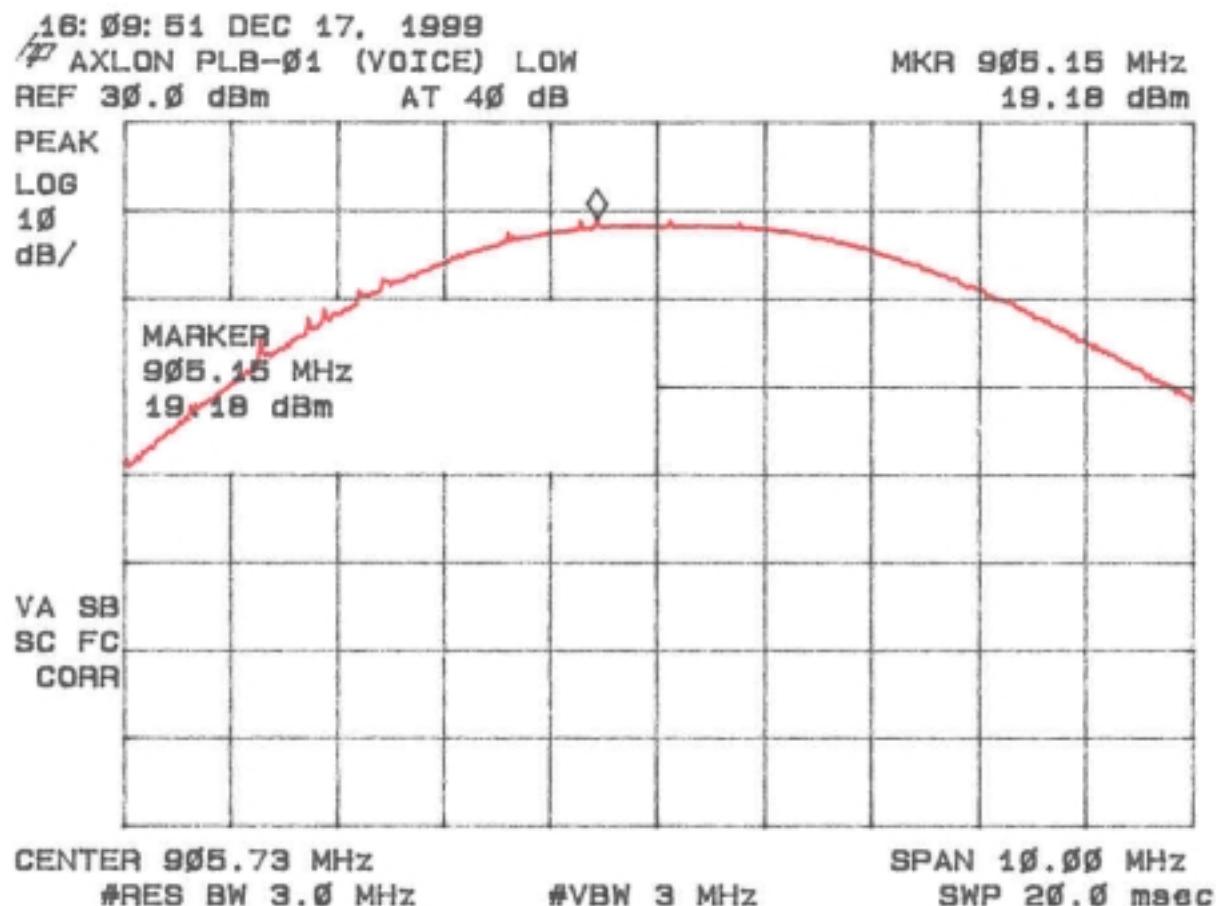


Figure 3e.
Peak Power per FCC Section 15.247(b) (Voice) Mid

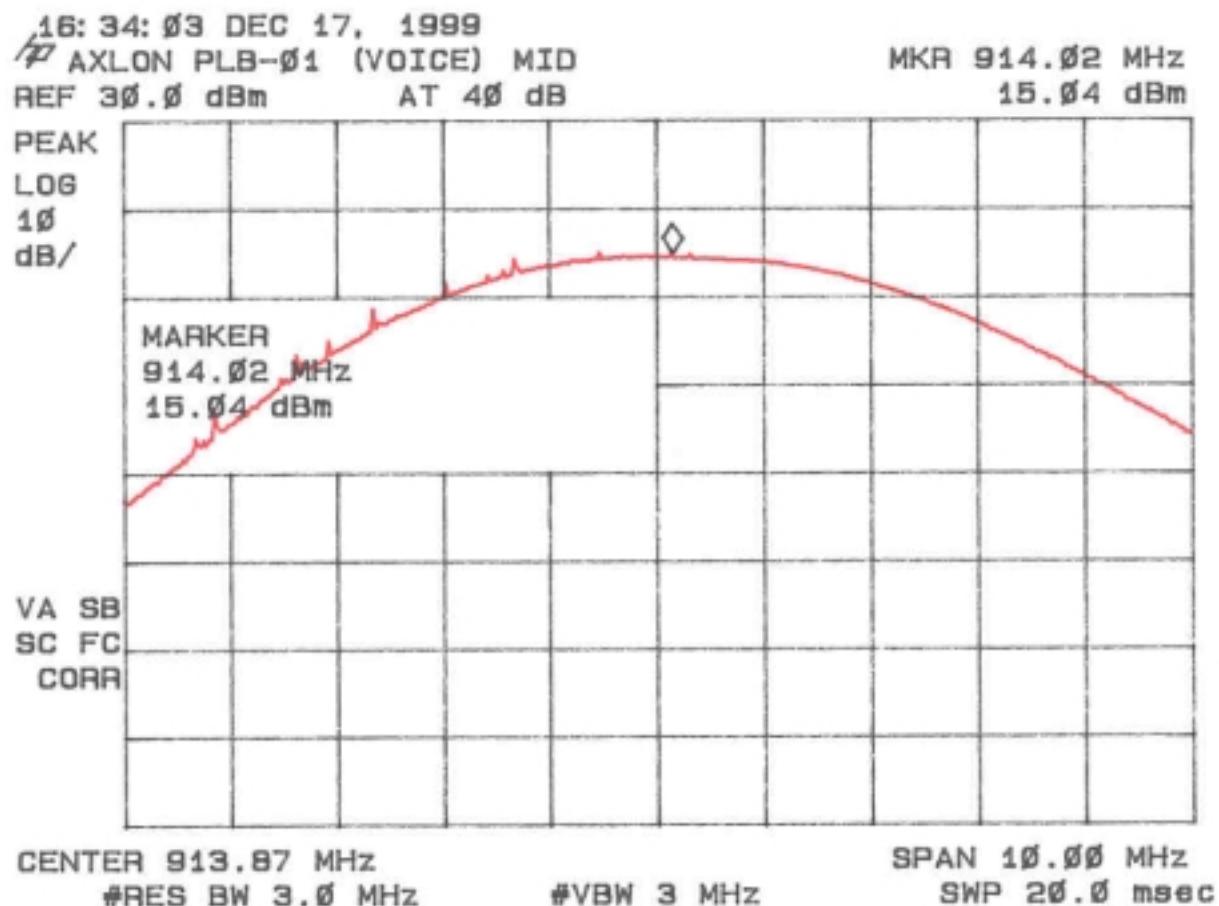


Figure 3f.
Peak Power per FCC Section 15.247(b) (Voice) High

