

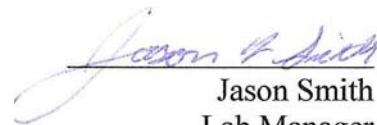
**Federal Communications Commission
(FCC) Report
for the
Plasma Sonic Ltd. Co.
ISM Over Modulated Transmitter (27.12 MHz)
To the requirements of
47CFR Part 18**

Monday, May 05, 2003

Prepared For:

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Analab Report # 1501E

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1.0 Administration

Testing Performed:

Testing to the requirements of FCC Part 18 (Code of Federal Regulations 47CFR Part 18)

Purpose:

To evaluate the Electromagnetic characteristics of the ISM Over Modulated Transmitter with respect to the FCC requirements for electromagnetic emissions.

Equipment Under Test (EUT):

Manufacturer: Plasma Sonic Ltd. Co.

Model: ISM Over Modulated Transmitter (Transmitting at 27.12 MHz)

Serial Number: NA

Contract:

Analab Quote Number AN1501A

Test Period:

April 7th – 30th, 2003

Location of Test Facility:

Analab Llc.

630 Heron Drive

PO BOX 336

Bridgeport, NJ 08014

Test Personnel:

Analab Llc.

Jason Smith – Lab Manager

Plasma Sonic LTD. Co.

James E. Bare

1.1 Summary of Results

Test Facility:	Customer:	Date: 5/6/03		
analab, llc. 630 Heron Drive P.O. Box 336 Bridgeport, NJ 08014	Plasma Sonic LTD. Co. 8005 Marble Ave. NE Albuquerque, NM 87110			
The ISM Over Modulated Transmitter, manufactured by Plasma Sonic LTD. Co. of Albuquerque, New Mexico configured as described herein, COMPLIES WITH THE REQUIREMENTS SET FORTH IN FCC Part 18 AS STATED BELOW:				
Test Description	Standard	Range	Limit	Results
Emissions:				
Radiated Emissions	FCC Part 18	20-400MHz	ISM Operating Frequency Below 500W 25µV/m @300m	Pass

Table 1: Test Summery

2.0 Introduction

This document is a report of tests to determine the Electromagnetic characteristics of the ISM Over Modulated Transmitter, manufactured by Plasma Sonic LTD. Co.

Test setups and procedures are described in this report and test results are presented herein on graphs and data sheets. Section 4 contains the test equipment used.

2.1 Test Specifications

FCC Part 18 – 10/1/01 (47CFR Part 18) Industrial, Scientific, and Medical Equipment

FCC/OST MP-5 – 1986 FCC Methods of measurements of Radio Noise Emissions from Industrial, Scientific, and Medical Equipment.

ANSI C63.4 – 2000 Interim Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz

FCC Part 2 – 10/1/02 (47CFR Part 2) Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

3.0 Description Of Equipment Under Test (EUT)

The ISM Over Modulated Transmitter manufactured by Plasma Sonic LTD. Co. Transmits on a frequency of 27.12 MHz and is modulated with a rise and fall time of approximately 1 microsecond. The transmitter has many possible applications and may be used to produce physiological effects on the body. The unit tested will most likely be a component in a final product.

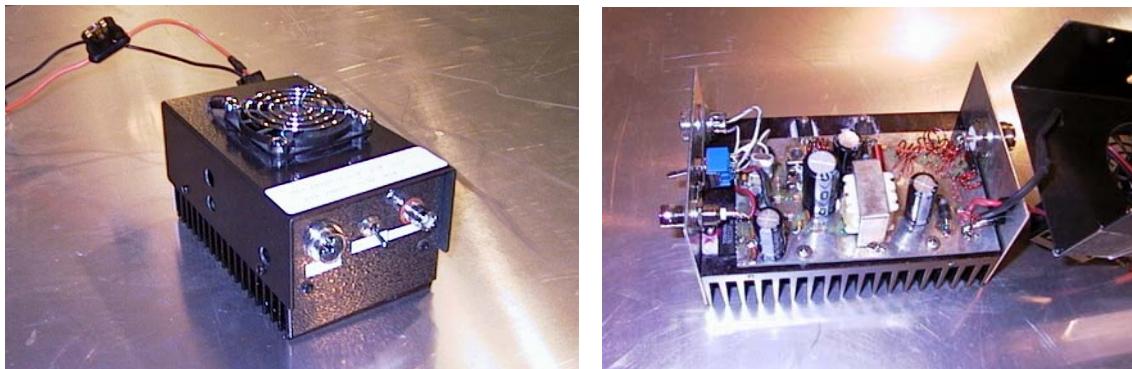


Figure 1: ISM Over Modulated Transmitter

Note: Hereinafter, the ISM Over Modulated Transmitter manufactured by Plasma Sonic LTD. Co. will be referred to as the EUT.

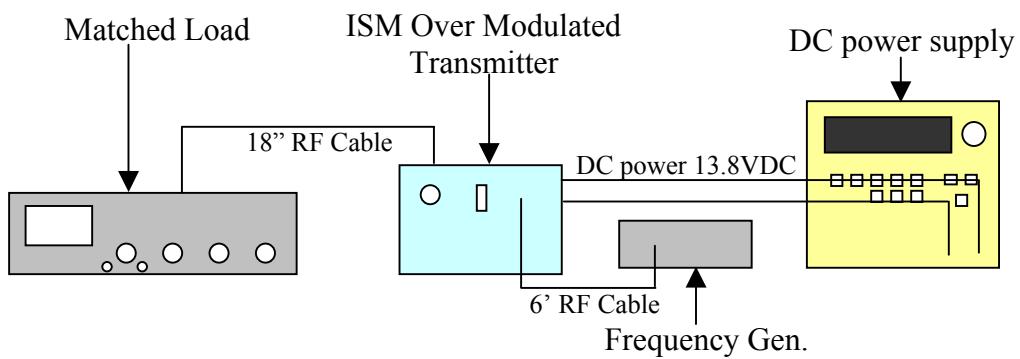


Figure 2: EUT Test Setup Diagram

Discription	Manufacurer	Model #	Serial #
EUT	Plasma Sonic LTD Co	ISM Transmiter	NA
Matched Load	MFU Enterprises	MFU 949E	NA
Freq. Gen.	Unknown		
P.S.*	Agilent	E3646A	MY0000006
RF Cable	Unknown	18" long	
RF Cable	50Ohm RG-58A/U	6' Long BNC	

* Power Supply was supplied by *analab L/C*. all other support equipment was supplied by Plasma Sonic LTD. Co.

Table 2: List of EUT Components

4.0 List of Test Equipment

analab #	Description	Manufacturer	Model #	Serial #	Calibration Due Date
101	Biconical Ant.	EMCO	3109	9607-3012	25-Oct-03
111	Log Periodic Ant.	EMCO	3146	9606-4564	30-Oct-03
200	EMI Receiver	Agilent (HP)	85462A	3325A00116	11-Mar-04
201	RF Filter	Agilent (HP)	85460A	3330A00124	11-Mar-04
901	Position Controller	EMCO	2090	9607-1155	NA
902	Antenna Mast	EMCO	2070-5	9604-1964	NA
903	EUT turntable	EMCO	2081	9605-1245	NA

Table 3: Test Equipment List

5.0 Emissions, Test Procedures and Results

5.1 Radiated Emissions Test Results

Radiated Emissions Testing was performed to the requirements of FCC Part 18 at the Analab Open Area Test Site (OATS) located at 630 Heron Drive, Bridgeport, NJ.

Prior to testing, the EUT was pre-scanned in a full anechoic chamber and then scanned closely with a near field probe and spectrum analyzer. The probe was moved over the entire surface and cables of the EUT and all emitting frequencies were recorded.

The EUT was then placed on a non-conductive turntable 80cm above the ground plane. Power was supplied to the EUT through a DC Power supply. The appropriate receiving antenna was placed on an antenna mast. Radiated Emissions testing was performed at a 10-meter distance from the EUT. The complete frequency range of 20MHz to 400MHz was scanned with a HP8546 CISPR Compliant Receiver. Maximization of each of the signals was achieved by raising the antenna from 1 to 4 meters in height and rotating the EUT 360°. The maximum Radiated Emissions using the average detector were then recorded and compared to the limits of FCC Part 18.

FCC Part 18 limits are given in $\mu\text{V}/\text{m}$ at 300 meter measuring distance. Readings from 10 meters were converted using the following correction:

$$\text{Change in dB} = 20 * \log \left\{ \frac{10 \text{ meters}}{300 \text{ meters}} \right\} = -29.5 \text{ dB}$$

$\text{dB}\mu\text{V}/\text{m}$ conversion to $\mu\text{V}/\text{m}$:

$$\mu\text{V}/\text{m} = 10^{\frac{\text{Final measured (dB}\mu\text{V}/\text{m})}{20}}$$

The test setup diagram is shown in Figure 3 and the test setup photograph is shown in Figure 4.

The maximized results for Radiated Emissions testing are shown in Figure 5 (Data Sheet) and Figure 6 (Graph).

THE EUT COMPLIES WITH THE LIMITS OF FCC PART 18 FOR EQUIPMENT OPERATING AT ISM FREQUENCIES UNDER 500W POWER FOR RADIATED EMISSIONS.

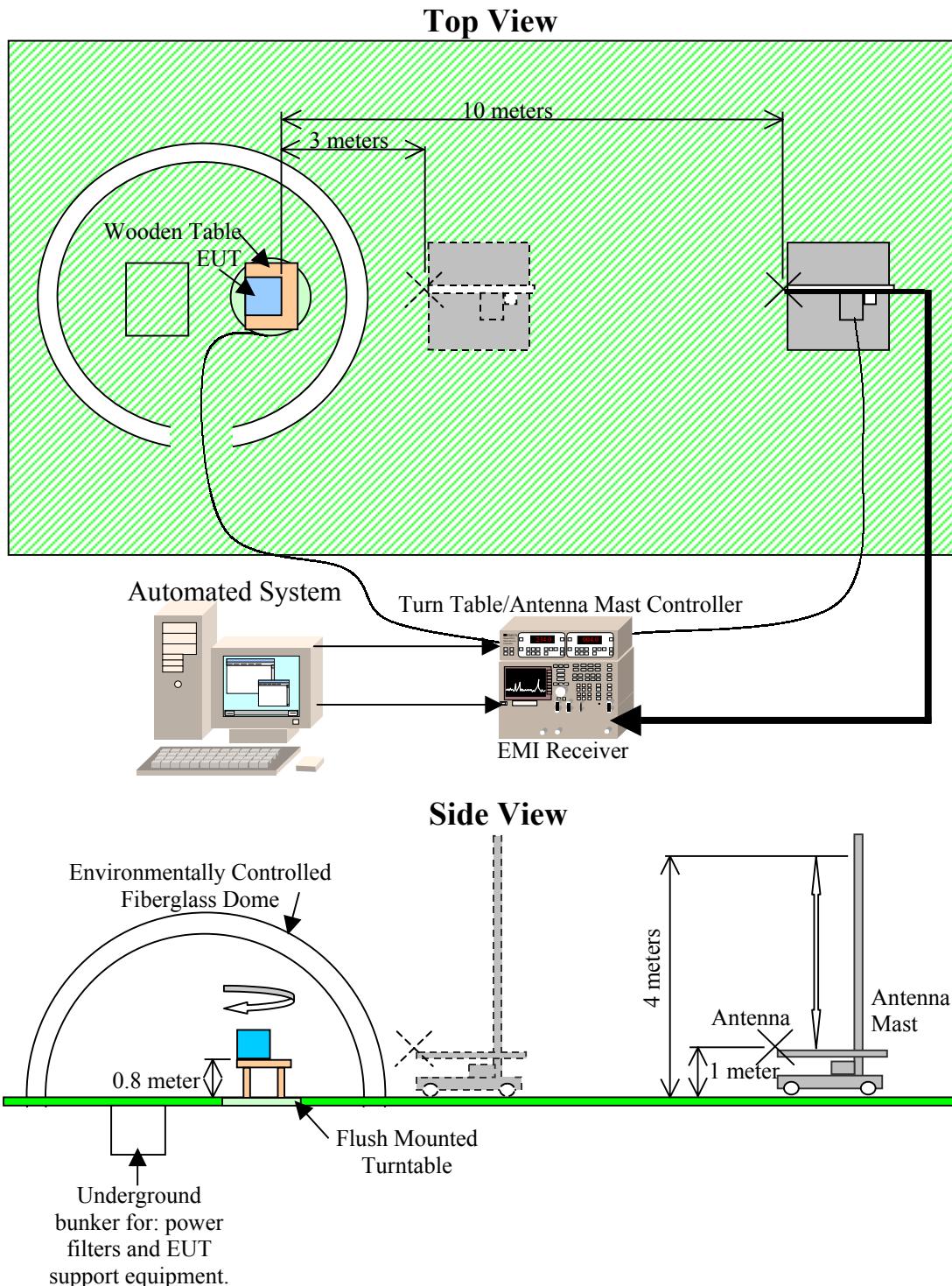


Figure 3: Radiated Emissions Test Setup Diagram



Antenna Mast
positioned at
10 meters



Rear of EUT
cabling layout



EUT Positioned
on Turntable in
environmentally
controlled dome

Figure 4: Radiated Emissions Test Setup Photographs

Figure 5: Radiated Emissions Data Sheet

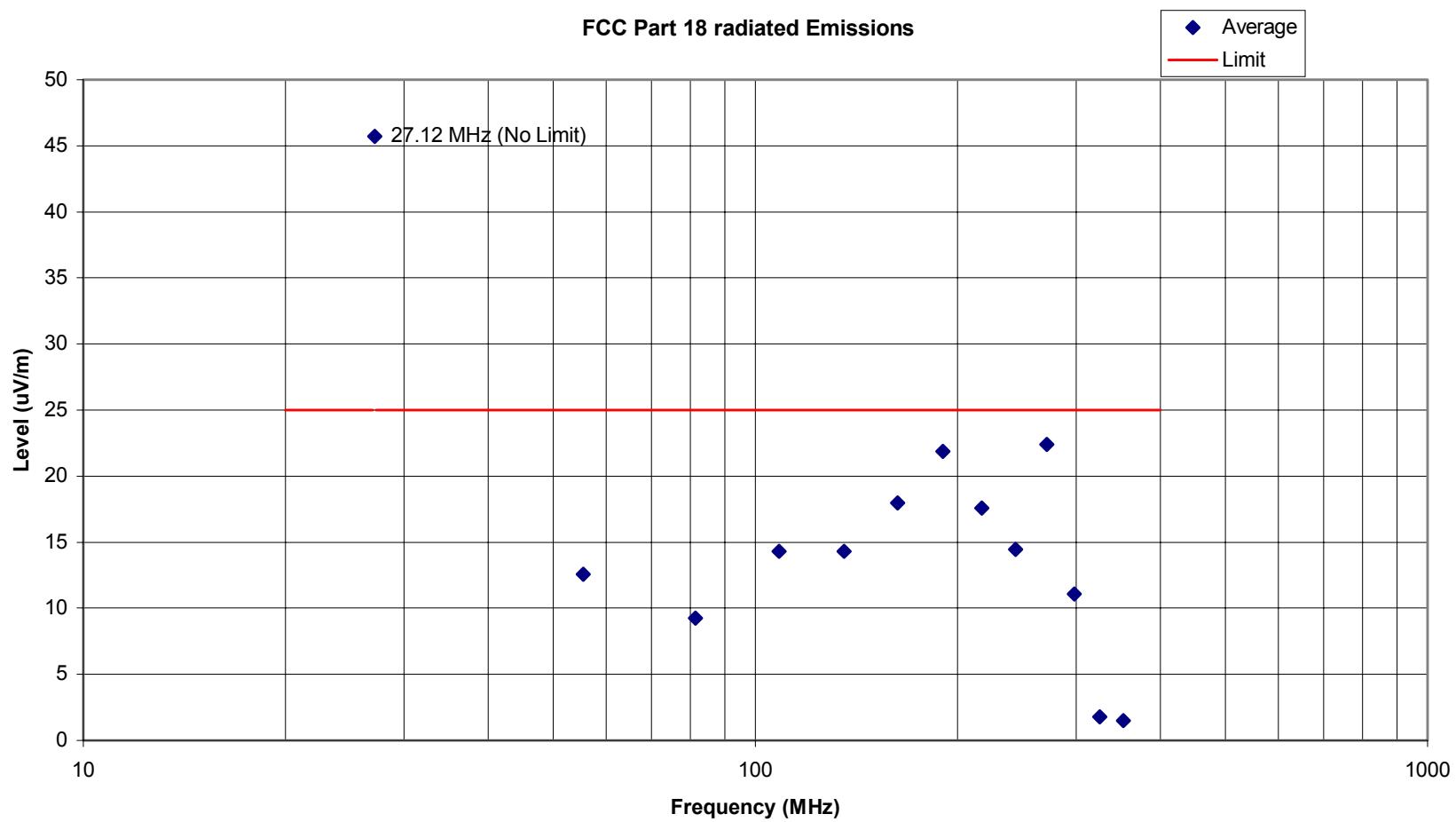


Figure 6: Radiated Emissions Test Results Graph