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NVLAP LAB CODE: 200413-0

July 15, 2004

Test Record

Product Verification
According to FCC Part 15 Subparts C

for

MONSTER, LLC
MODEL: 168007-00

TABLE OF CONTENTS

Revision History

Revision	Date	Description of Changes	Author
0.1	15 Jul. 2004	Initial document	S. Sohn
0.2	20 Jul. 2004	:Corrections: page 33	L. Kogan

Introduction – Test Plan

This report describes the results of all measurements made on portable FM transmitter which falls under the class of intentional radiator by the FCC Part 15 Subpart C Rules and Regulations.

This EUT is designated: **FM Stereo Full Spectrum Modulator, vehicular use.**

Model : **168007-00**

Description of tests	Reference FCC prt.15	Comments
Radiated Emissions	15.209	Test and limit specified in FCC prt.15, Clause 15.209
Field Strength of Fundamental and Emissions within permitted band	15.239	Limit specified in FCC prt.15, Clause 15.239 Limit:0.25 mV/m @ 3m ;w/average detector
Emission bandwidth; Occupied channel bandwidth	15.239	Limit specified in FCC prt.15, Clause 15.239 Limit:200 kHz

1.0 CERTIFICATION OF TEST DATA

Verification statement.

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the test sample (EUT), and characteristics and measurements obtained as of the dates and the times of the test under the conditions specified and to the methods of FCC Part 15, Subpart C "Intentional Radiators" and Part 2 "Frequency Allocations and radio Treaty Matters; General Rules and regulations"

The test results provided with this report, indicate that the equipment tested:
FM Stereo Full Spectrum Modulator for vehicular use. MODEL : **168007-00** is compliant with the following Rules and Regulations

A. 47 Code of Federal Regulations, Part 15 Subpart C
B. 47 Code of Federal Regulations, Part 2
C. ANSI C63.4: 2000

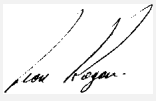
Tests performed by:

_____
Sandra Sohn
EMC Test Engineer

Report prepared by:

_____
Sandra Sohn
EMC Test Engineer

Report approved by:



Leon Kogan
Technical Director,

JMR Compliance Engineering, 20400 Plummer Street, Chatsworth CA 91311.
E-mail:emc@jmr.com

2.0 GENERAL INFORMATION

2.1 Client Information

Company Name:	Monster, LLC
Contact:	Irene Baran
Company Address:	7251 West Lake Mead Blvd. Suite 342 Las Vegas, NV 89128
Phone:	(877) 800-8989

2.2 Administrative Data

Device tested:	FM Stereo Full Spectrum Modulator for vehicular use
Model:	168007-00
Equipment category:	Intentional Radiators
Accessories:	N/A
Expository Statement:	This device is intended for personal use.
Purpose of test:	Compliance to FCC Rules and Regulations, Part 15, Subpart C
Date of test:	07/14/2004 – 07/15/2004
Place of the test:	JMR Electronics, Inc. Compliance Engineering Laboratory 20400 Plummer Street Chatsworth, CA 91311 Phone: (818) 993-4801

3.0 Description of Equipment Under Test (EUT)

3.1 Brief Description of the EUT

The EUT is a portable FM Transmitter which is designed to connect to a personal MP3 player and allow reception of the transmitted signal using a standard FM radio. There are six (3) available channels. It features a fully Adjustable channel digital tuner with 3-button control and a 3.5 digit LED display.
There is no ON/OFF switch for this product. Circuit goes ON when product is plugged to automobile cigarette lighter outlet.
Power consumption of FM transmitter IC is 20ma typical at 5v.
Wires connecting to MP3 player are used as the antenna. Alteration of antenna by user is not possible.

The EUT was configured on a table top. device and was tested with standard MP3 player connected. The modulation frequency was provided by external Test Oscillator HP 651B.

Operating frequencies : 88.1, 98.1, 107.9 MHz.
Clock frequencies : 7.6 MHz
Power Supply : External 12VDC battery.

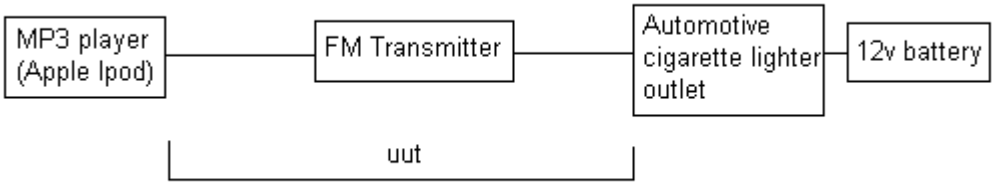
3.2 Test Run

1) The EUT was connected through Monster Stubby cigarette lighter connector to the 12VDC battery
   Apple Ipod, as a standard MP3 player, was connected to the appropriate input/output of the EUT;
2) Test Oscillator HP 651B had been connected to the Aux In input of the docking connector when it was necessary.

For test purposes the following three channels were selected for measurements :
88.1 MHz 98.1 MHz 107.9 MHz

Each channel had generated its frequency continuously for the duration of the testing. The above mentioned set-up allowed the article to perform sufficiently for the test purposes and required time.

3.3 Block Diagram of the Test Setup



3.4 Support Equipment List:

No	Equipment	Model	S/N (last 6)	Notes
1	**HP Test Oscillator**	651B	1230A08435	
2	**MP3 player**	M8976LL/A		Apple Ipod
3	**Standard 12VDC battery**	N/A	N/A	
4	**Comm. Receiver**	ICOM_IC-R5	101410	
5	**DC Power Supply**	DCS8-13E	6B1012	

3.5 Cabling Configuration

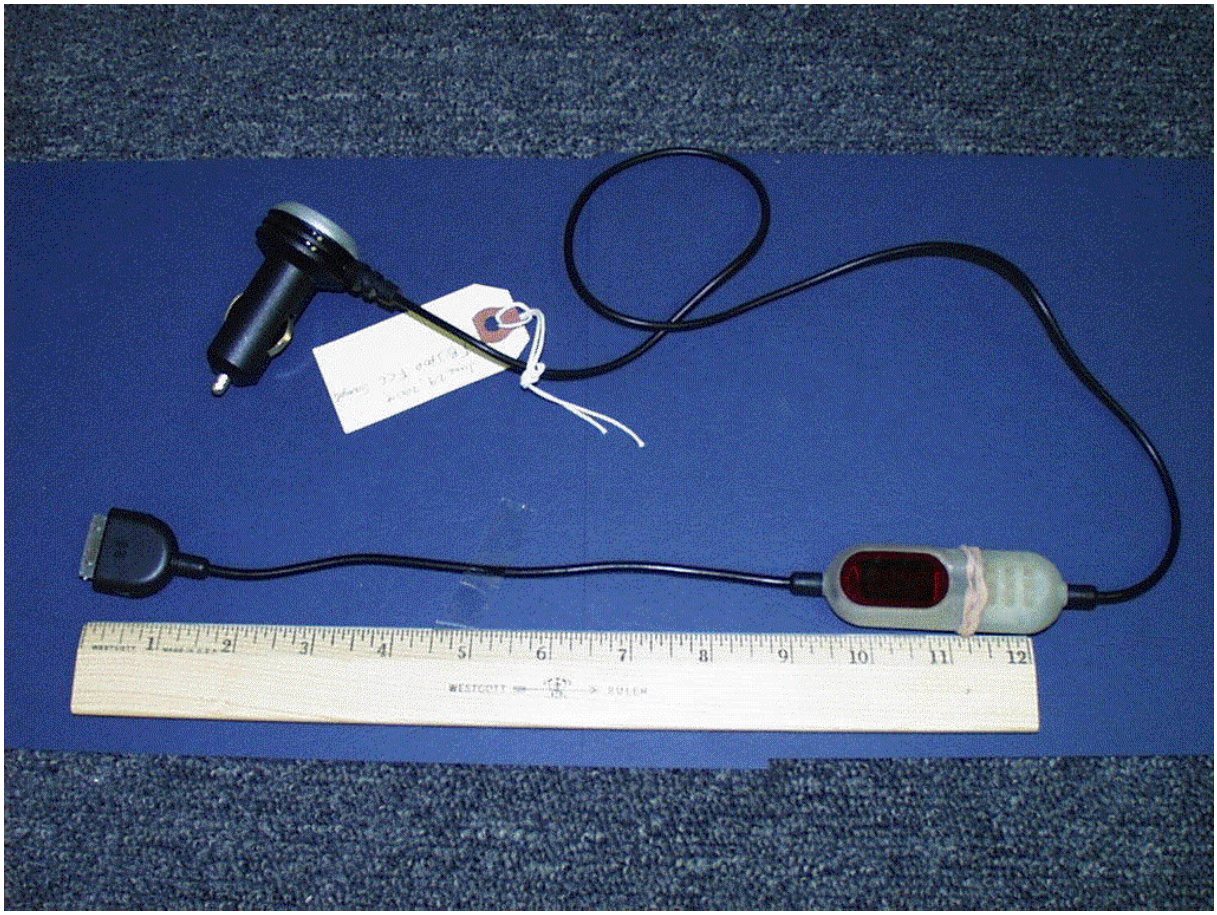
Power Cords:

Unit	HP 651B Test Oscillator
MFG	Standard
Shielded	No
Length	2 m

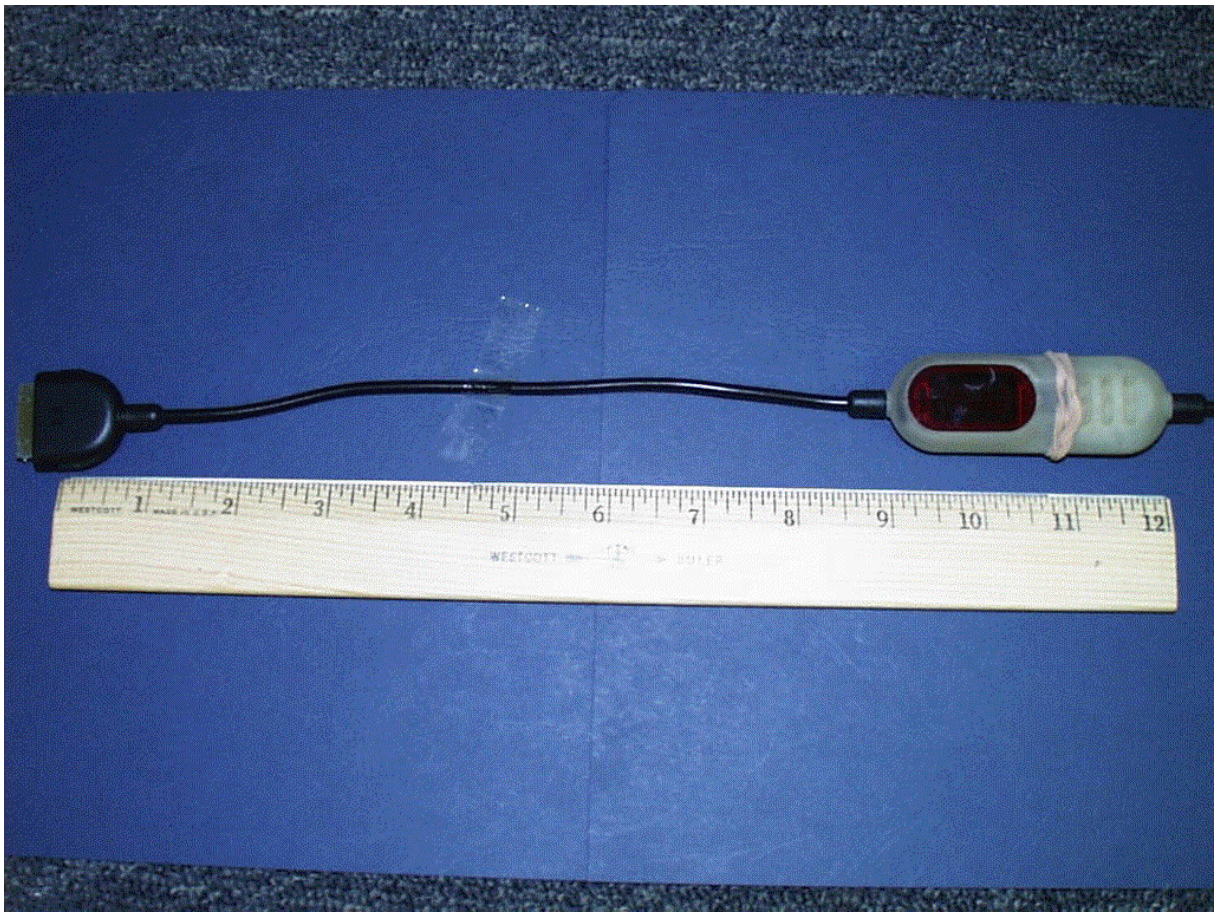
I / O Cables External:

Connection	AUX In of the EUT to Out, 50 Ohm of the HP 651B
Cable	Generic 50 Ohm RF cable
Shielded?	Yes
Connector	BNC, Jack
Length	0.3 m

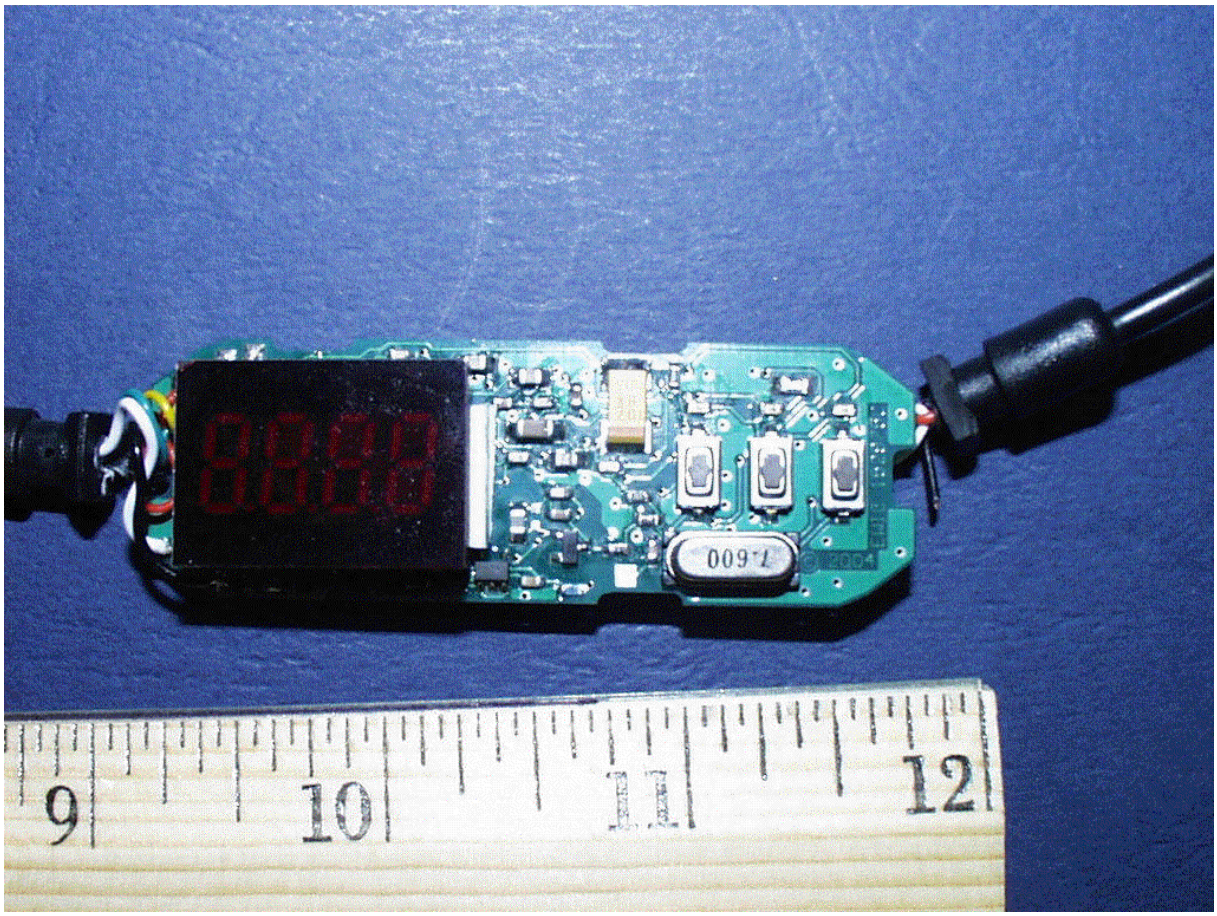
Photos of the EUT



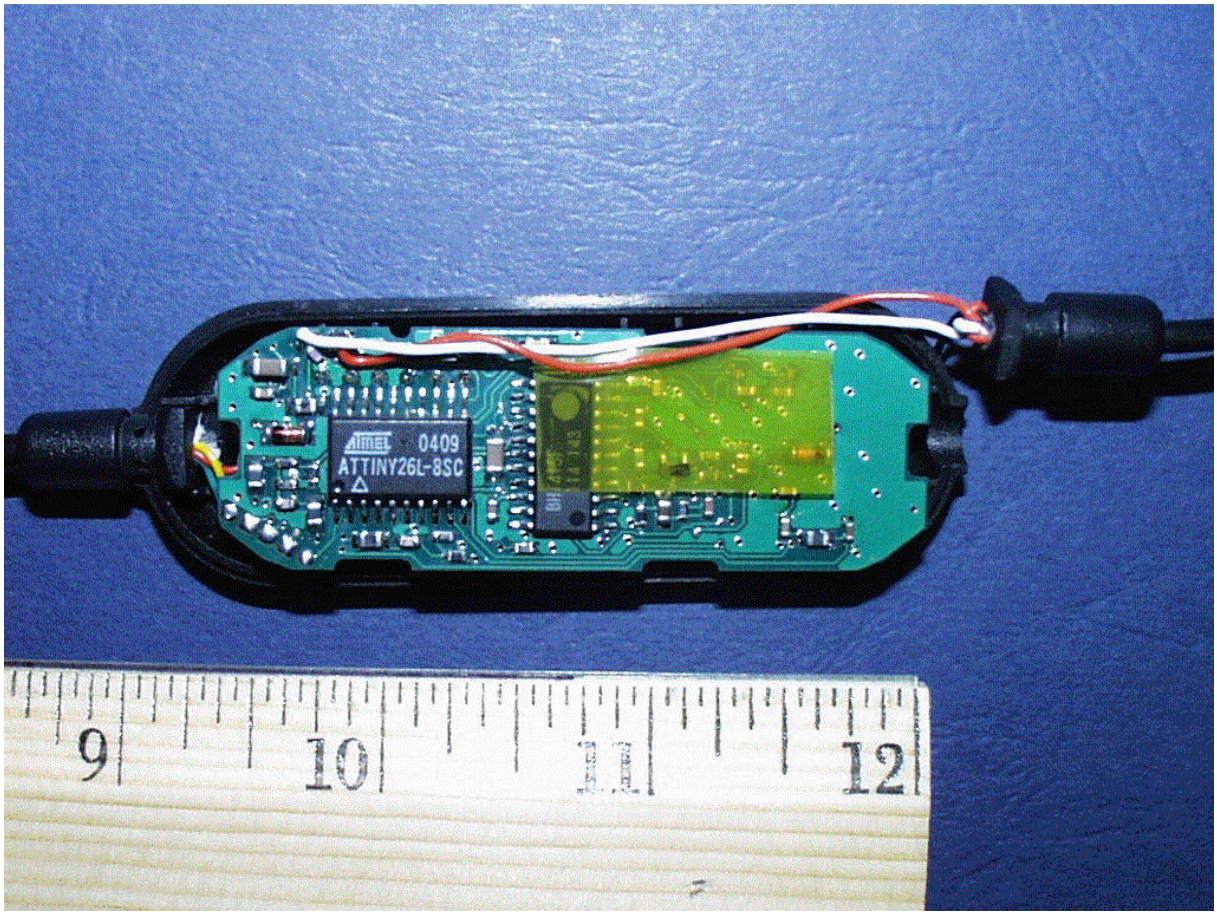
EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00



EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
FM Modulator & Antenna



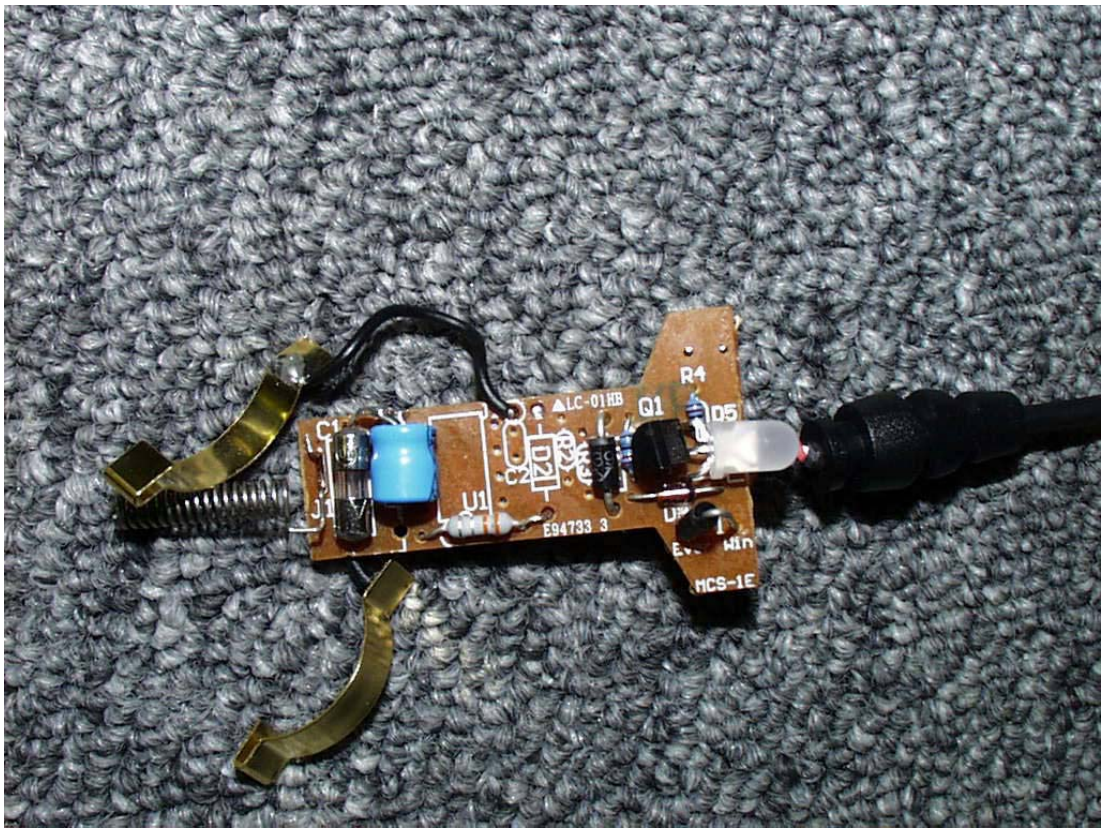
EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
FM Modulator
PCB components side



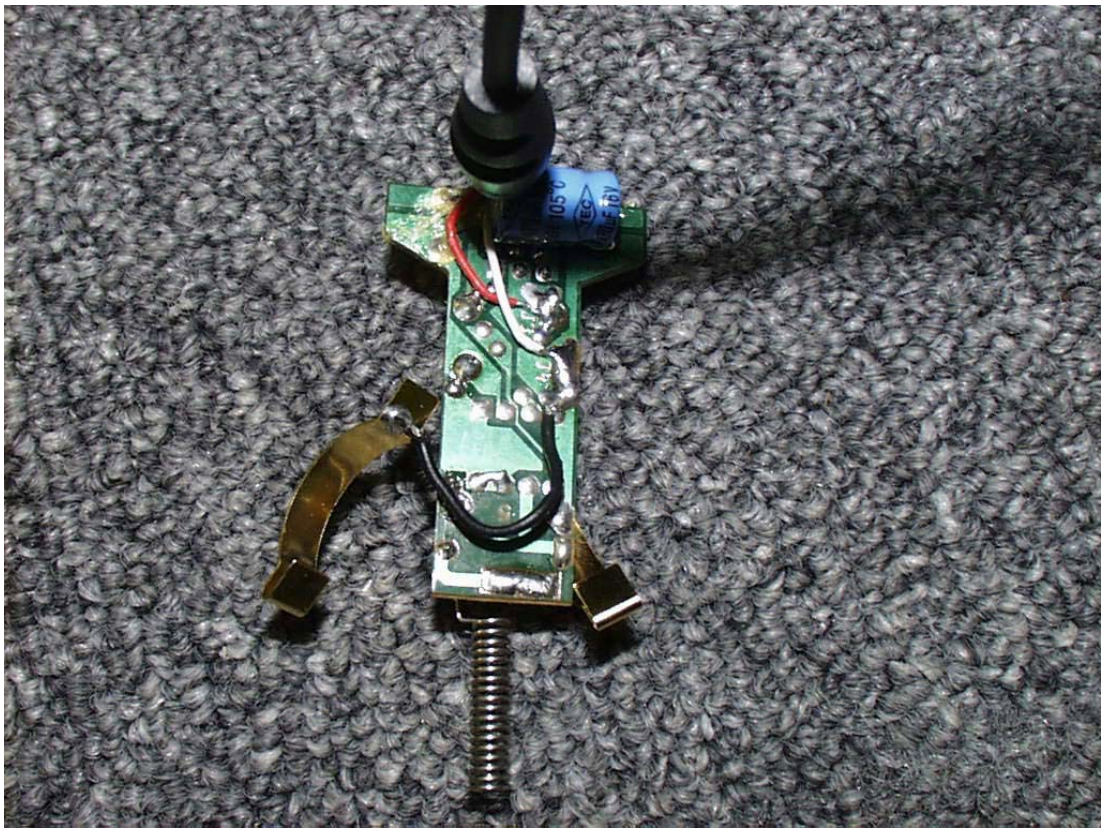
EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
FM Modulator
PCB solder side

EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
Monster Stubby Cigarette Lighter connector

EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
Monster Stubby Cigarette Lighter connector
Open covers



EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
Monster Stubby Cigarette Lighter connector
PCB components side



EUT: FM Stereo Full Spectrum Modulator for vehicular use.
MODEL : 168007-00
Monster Stubby Cigarette Lighter connector
PCB solder side

3.7 EUT Modifications

N/A

3.8 Photographs of EUT Modifications

N/A

4.0 Test equipment used

Device	Model No.	Serial No.	Last Cal.	Next Cal
Cable 1	8214	CBL-006	02/19/04	02/19/05
Analyzer	HP85462A	3325A00120	04/11/04	04/11/05
Cable 2	8268	CBL-002	02/19/04	02/19/05
Preselector	HP85460A	3330A00117	04/11/04	04/11/05
Qpeak Adapter	HP85462 Internal	Internal	04/11/04	04/11/05
Pre-Amplifier	None			
Tower 1	EMCO 1050	9310-1786	N/A	N/A
Turntable 1	EMCO 1060	9409-1753	N/A	N/A
Bilog Antenna	CBL6112B	2604	09/03/03	09/03/04
Shielded Semi-Anechoic Chamber	RANTEC	N/A	03/16/04	03/16/05
Temperature and Humidity Recorder	Dickson TH8-24C	5097755	09/16/03	09/186/05
Analyzer	HP8590A	2618A01059	11/05/03	11/05/04
Amplifier	HP 8447F	3113A05772	3/11/04	3/11/05
Temp. chamber	Industrial oven & equipment IndoCo	5966B	N/A	N/A
Thermocouple Monitor	SR600	34202	12/16/03	12/16/04
Voltmeter	Fluke 83	65530501	01/13/04	01/13/05
Bilog Antenna	CBL6111B	1167	03/08/04	03/08/05
Signal Generator	HP8648C		09/04/03	09/04/04

5.0 Field Strength of Fundamental and Emissions within permitted band.

Test Requirements: **FCC Part 15 : Subclause 15.239**
Test Method: **ANSI C63.4: 2000**

Limit : The maximum Field Strength authorized within 200 kHz is 250 uV/m @ 3m
Mode of operation: with and without modulation**.**

The test facility consists of a shielded semi-anechoic chamber with attached shielded control room. The semi-anechoic chamber is approximately 18 feet wide by 28 feet long by 19 feet high. A hybrid absorber combines high performance anechoic polyurethane foam with a ferrite tile base to achieve high levels of absorption and power dissipation capability.

The EUT had been placed at the 0.8 m height on the non-conducting table. Transmitter had been turned ON without modulation and worked at the frequencies of the selected 1, 61 and 80 channels.
All data was obtained via a HP 85876A EMI measurement software package using an HP 85462A Receiver which is compliant to CISPR 16. The EUT was configured in various geometric patterns to find the geometric configuration and EUT attitude that produced the largest RF power.
After determination of the maximum emissions configuration the distance of the EUT to the scanning antenna was set to 3 meters.

At each of three selected channels 88.1 MHz, 98.1 MHz, and 107.9 MHz Field Strength of Emissions had been measured.

The field strength is calculated by adding the Antenna Factor and Cable losses, and subtracting the Amplifier Gain:

FS=SA+AF+CL-AG

Where: **FS= field strength in dB (uV/m)**
SA= receiver amplitude in dB (uV)
CL= cable attenuation in (dB)
AF= antenna factor in (dB)
AG= amplifier gain

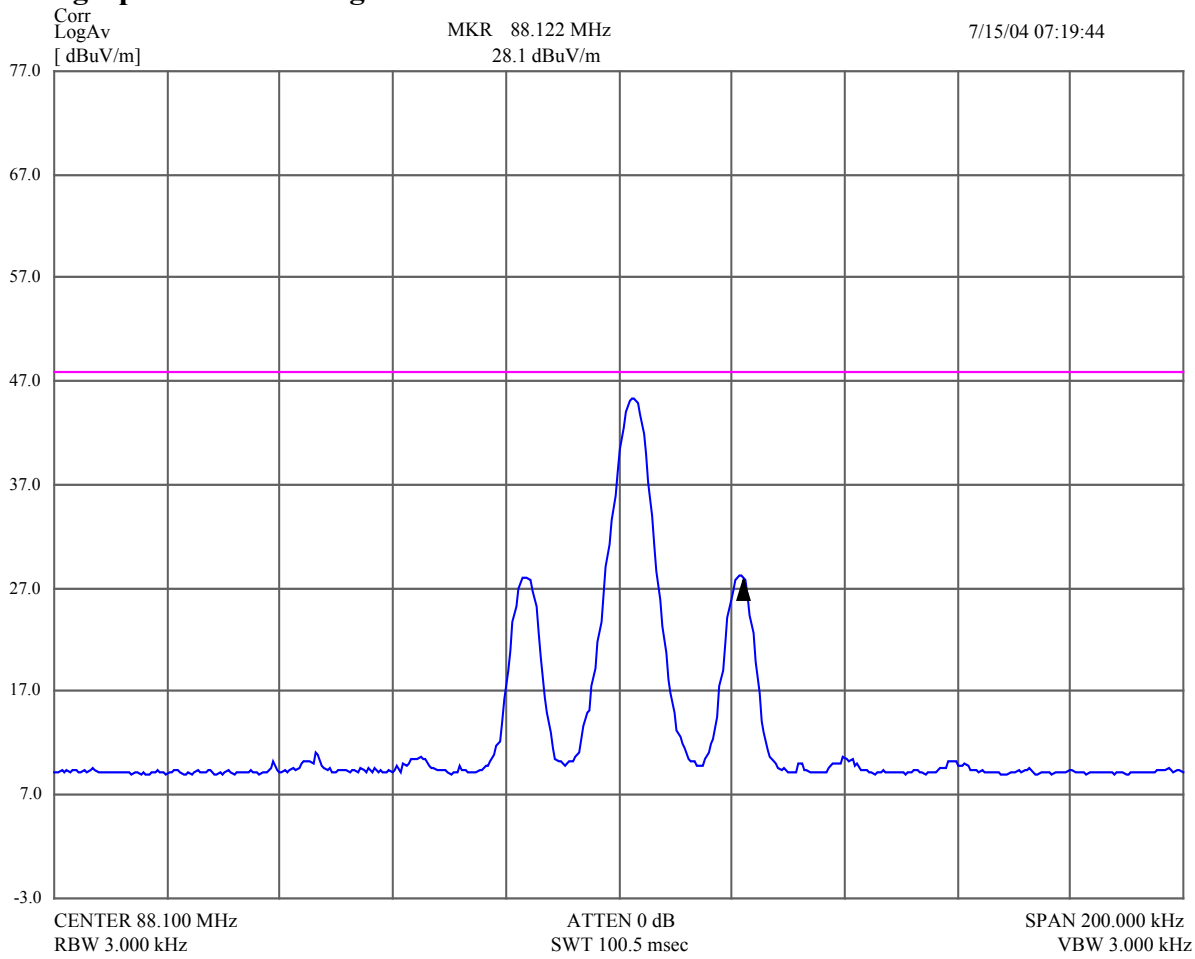
5.1. Channel 88.1 MHz

5.1.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.083504	27.93	48.00	-20.07	Horz	212	48	PASS
88.102496	45.23	48.00	-2.77	Horz	212	48	PASS
88.122000	28.12	48.00	-19.88	Horz	212	48	PASS

Receiver graph of Field Strength of Emissions at 3 m

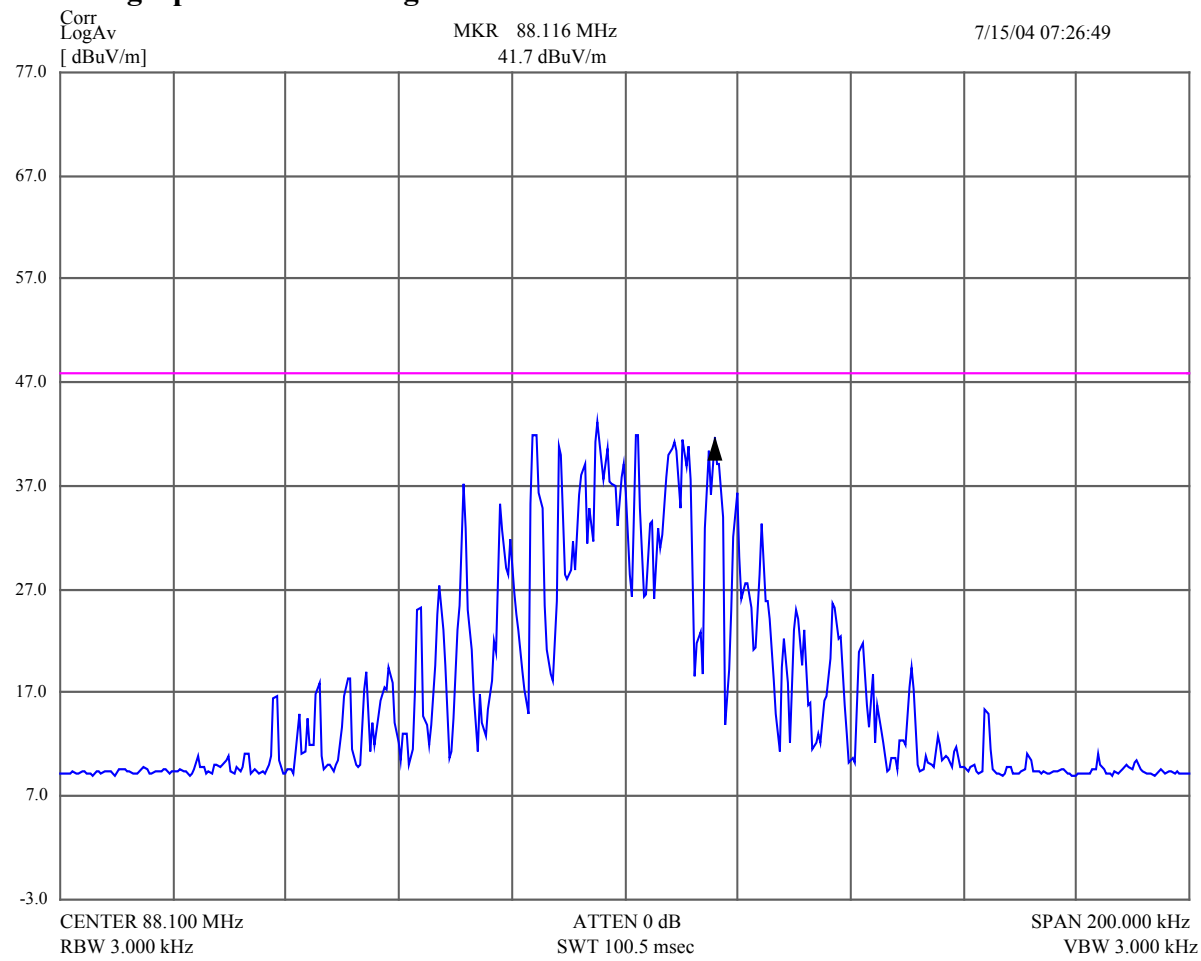


5.1.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.084000	41.91	48.00	-6.09	Horz	212	48	PASS
88.088496	40.64	48.00	-7.36	Horz	212	48	PASS
88.095504	43.20	48.00	-4.80	Horz	212	48	PASS
88.102000	41.75	48.00	-6.25	Horz	212	48	PASS
88.108496	40.50	48.00	-7.50	Horz	212	48	PASS
88.116000	41.68	48.00	-6.32	Horz	212	48	PASS

Receiver graph of Field Strength of Emissions at 3 m



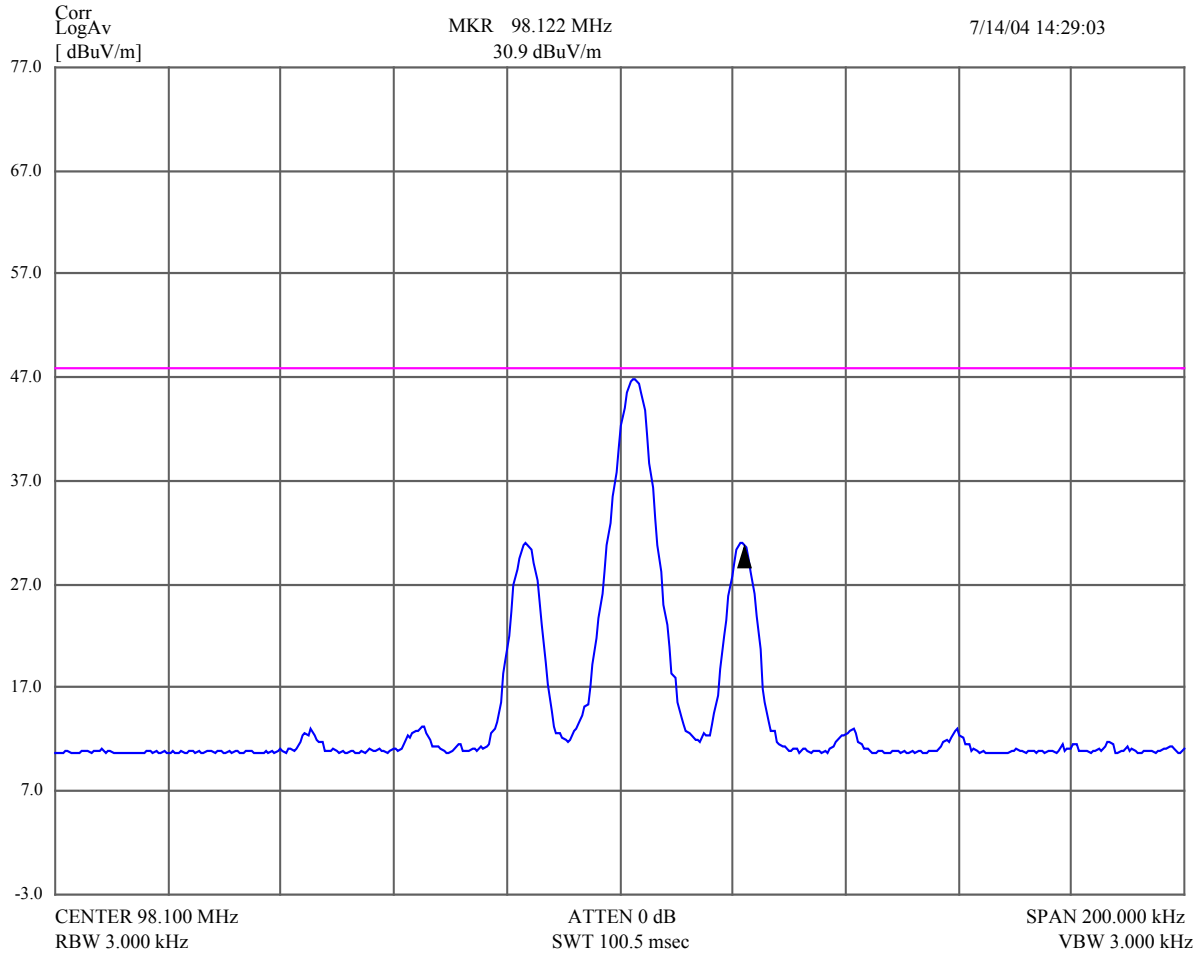
5.2. Channel 98.1 MHz

5.2.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
98.083504	30.85	48.00	-17.15	Horz	301	57	PASS
98.102496	46.78	48.00	-1.22	Horz	301	57	PASS
98.122000	30.85	48.00	-17.15	Horz	301	57	PASS

Receiver graph of Field Strength of Emission at 3 m

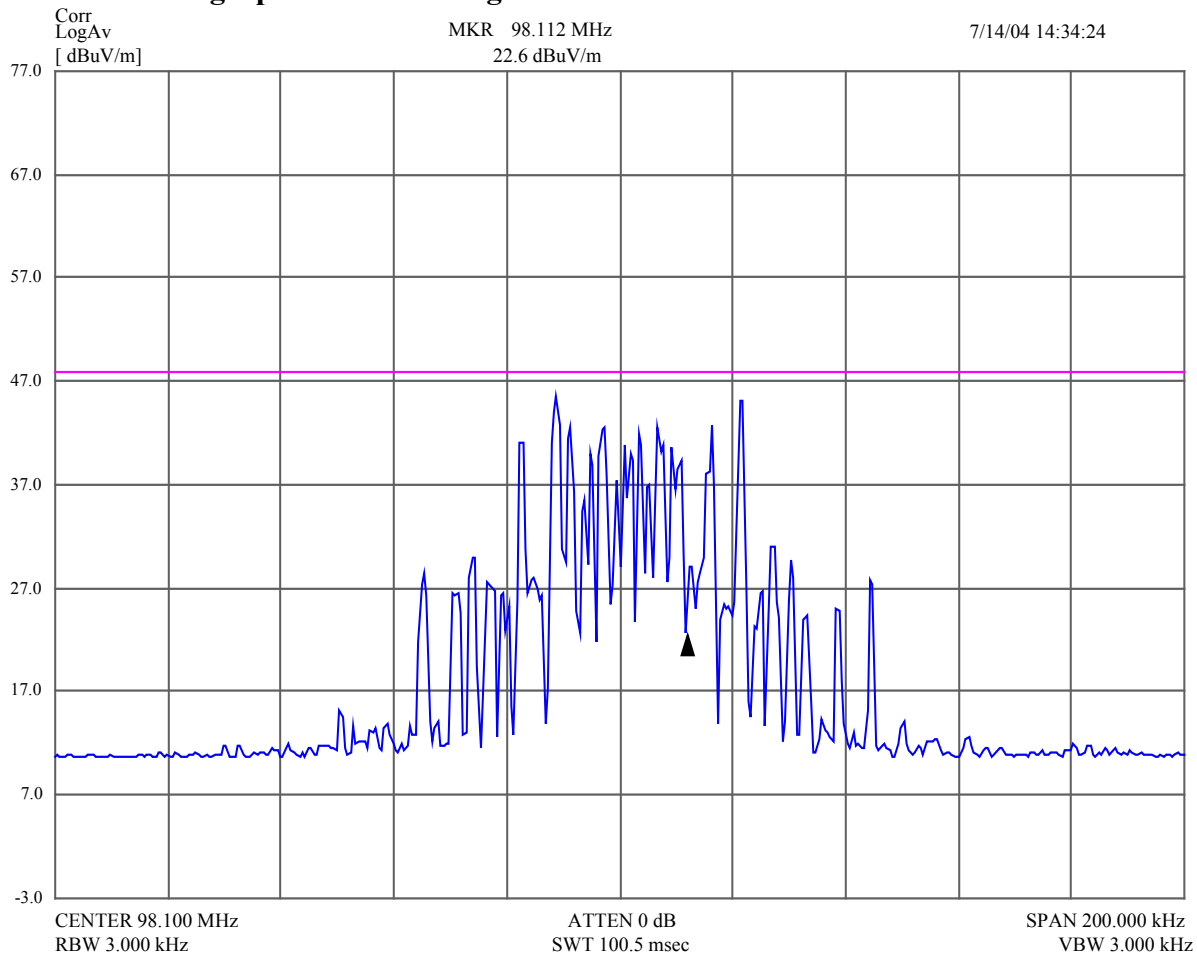


5.2.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
98.082496	40.91	48.00	-7.09	Horz	301	57	PASS
98.089000	45.50	48.00	-2.50	Horz	301	57	PASS
98.097000	42.29	48.00	-5.71	Horz	301	57	PASS
98.103504	41.82	48.00	-6.18	Horz	301	57	PASS
98.107504	40.05	48.00	-7.95	Horz	301	57	PASS
98.116496	42.64	48.00	-5.36	Horz	301	57	PASS
98.121504	45.02	48.00	-2.98	Horz	301	57	PASS

Receiver graph of Field Strength of Emissions at 3 m



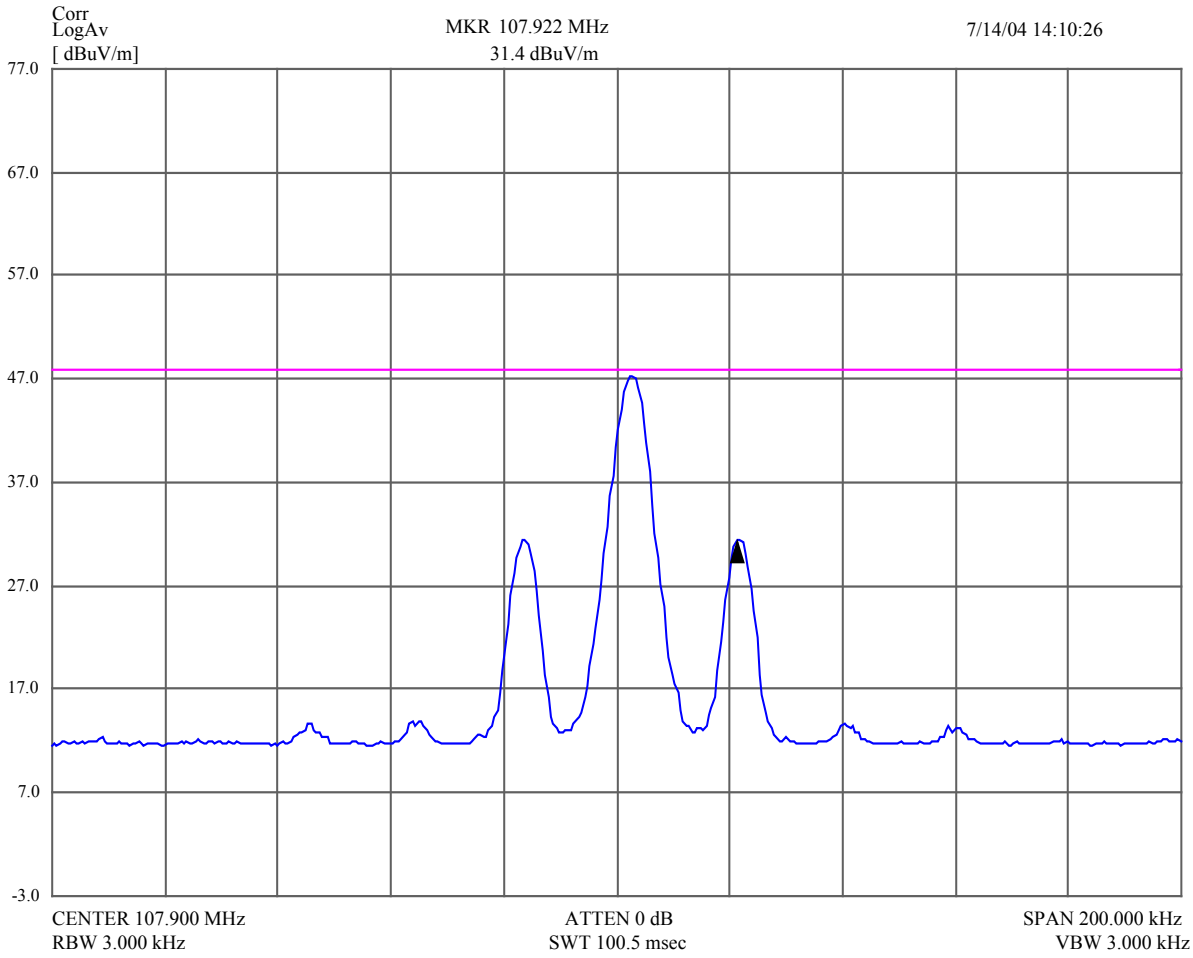
5.3. Channel 107.9 MHz

5.3.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
107.884000	31.28	48.00	-16.72	Horz	284	86	PASS
107.903000	47.20	48.00	-0.80	Horz	284	86	PASS
107.921504	31.36	48.00	-16.64	Horz	284	86	PASS

Receiver graph of Field Strength of Emissions at 3 m

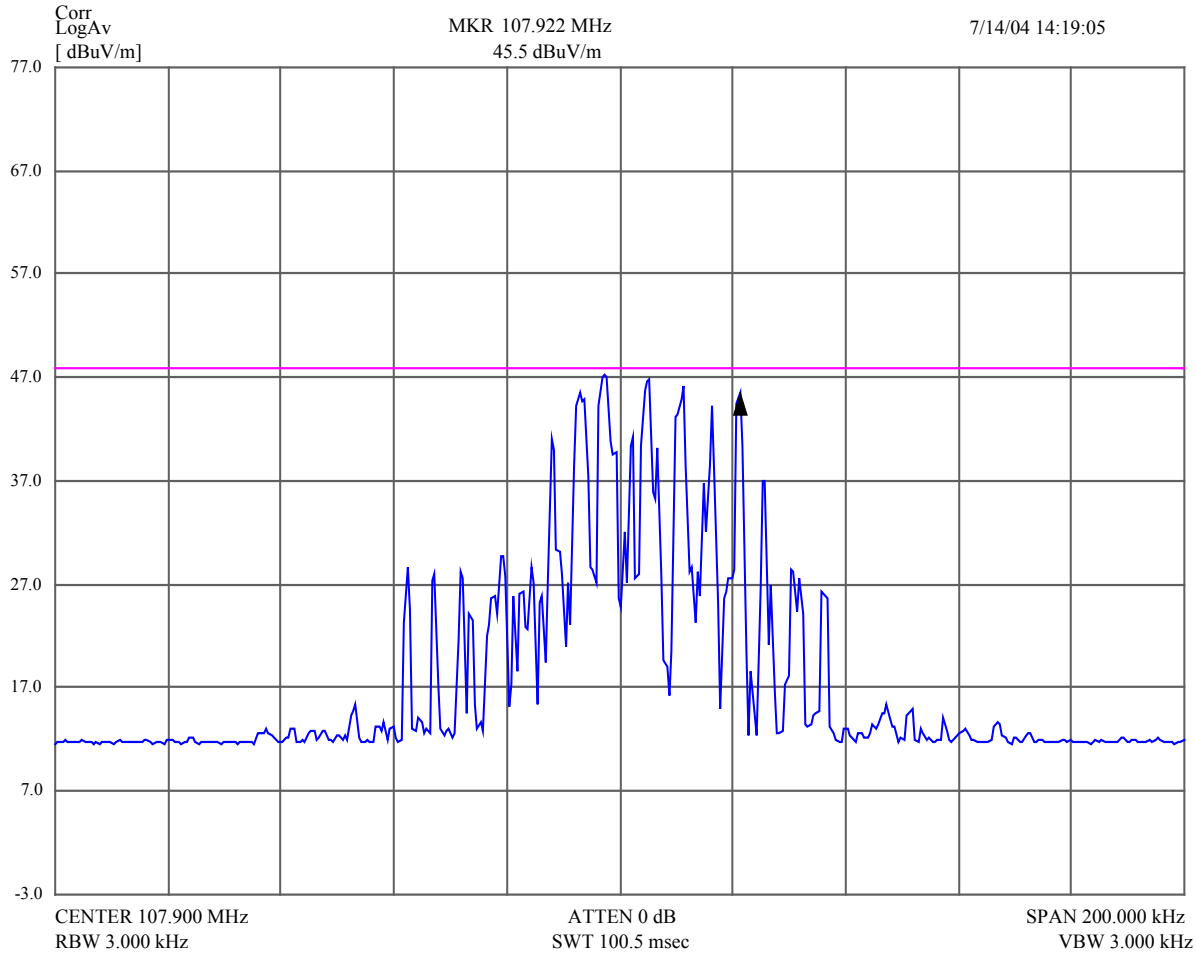


5.3.2 with modulation

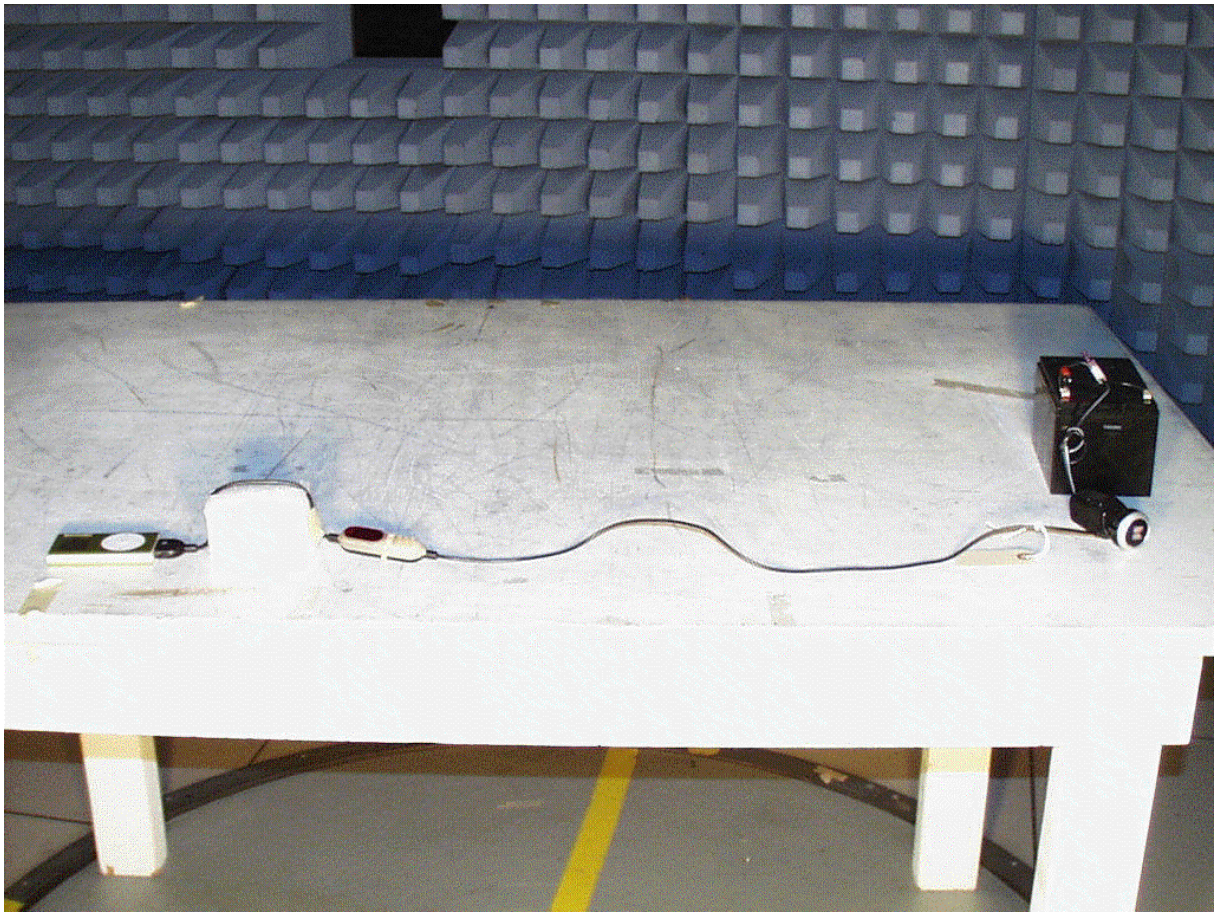
Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
107.893000	45.49	48.00	-2.51	Horz	284	86	PASS
107.897504	47.15	48.00	-0.85	Horz	284	86	PASS
107.905000	46.57	48.00	-1.43	Horz	284	86	PASS
107.911000	44.83	48.00	-3.17	Horz	284	86	PASS
107.916496	44.27	48.00	-3.73	Horz	284	86	PASS
107.921504	45.52	48.00	-2.48	Horz	284	86	PASS

Receiver graph of Field Strength of Emissions at 3 m



5.4 Photographs of Test Set-Up



6.0 Radiated Emissions.

Test Requirements:	**FCC Part 15 : Subclause 15.209**
Test Method:	**ANSI C63.4: 2000**
Limit :	FCC Part 15 : Subclause 15.209
Mode of operation:	normal
Room Ambient Temperature:	20°C±1°C
Relative Humidity:	38%±5%

The test facility consists of a shielded semi-anechoic chamber with attached shielded control room. The semi-anechoic chamber is approximately 18 feet wide by 28 feet long by 19 feet high. A hybrid absorber combines high performance anechoic polyurethane foam with a ferrite tile base to achieve high levels of absorption and power dissipation capability.

The EUT had been placed at the 0.8 m height on the non-conducting table. Transmitter had been turned ON with modulation and worked at the frequencies of the selected channels.
All data was obtained via a HP 85876A EMI measurement software package using an HP 85462A Receiver which is compliant to CISPR 16. The EUT was configured in various geometric patterns to find the geometric configuration and EUT attitude that produced the largest RF power.
After determination of the maximum emissions configuration the distance of the EUT to the scanning antenna was set to 3 meters.

At each of three selected channels 88.1 MHz, 98.1 MHz, and 107.9 MHz Radiated Emissions had been measured.

The field strength is calculated by adding the Antenna Factor and Cable losses, and subtracting the Amplifier Gain:

FS=SA+AF+CL-AG

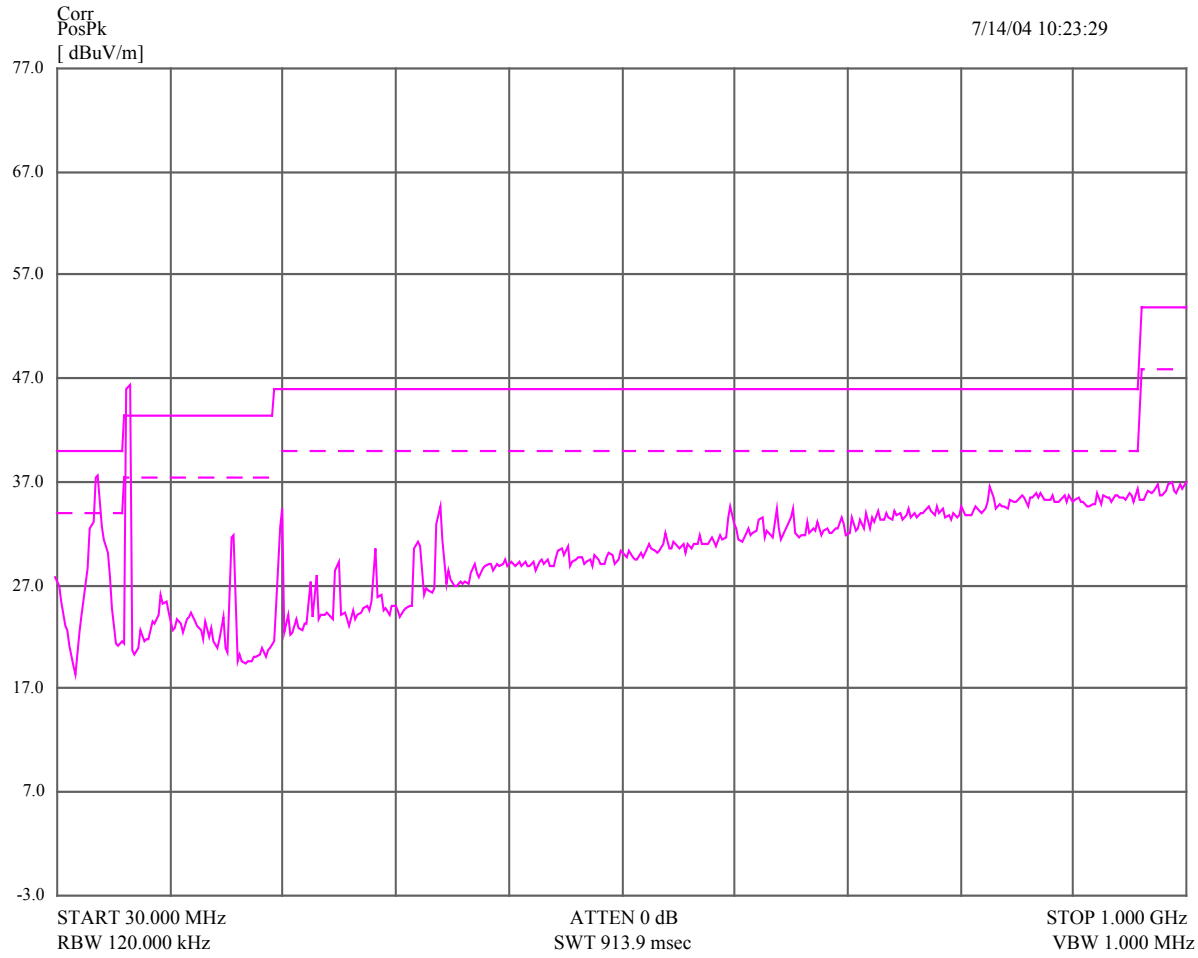
Where: **FS= field strength in dB (uV/m)**
SA= receiver amplitude in dB (uV)
CL= cable attenuation in (dB)
AF= antenna factor in (dB)
AG= amplifier gain

Measurements expanded uncertainty equals 3.26 dB with 95% confidence level.

6.1. Channel 88.1 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
60.381752	35.33	40.00	-4.67	Horz	404	29	PASS
176.203744	30.98	43.50	-12.52	Horz	171	23	PASS
216.000000	32.92	43.50	-10.58	Horz	179	149	PASS
352.413760	33.22	46.00	-12.78	Horz	96	352	PASS

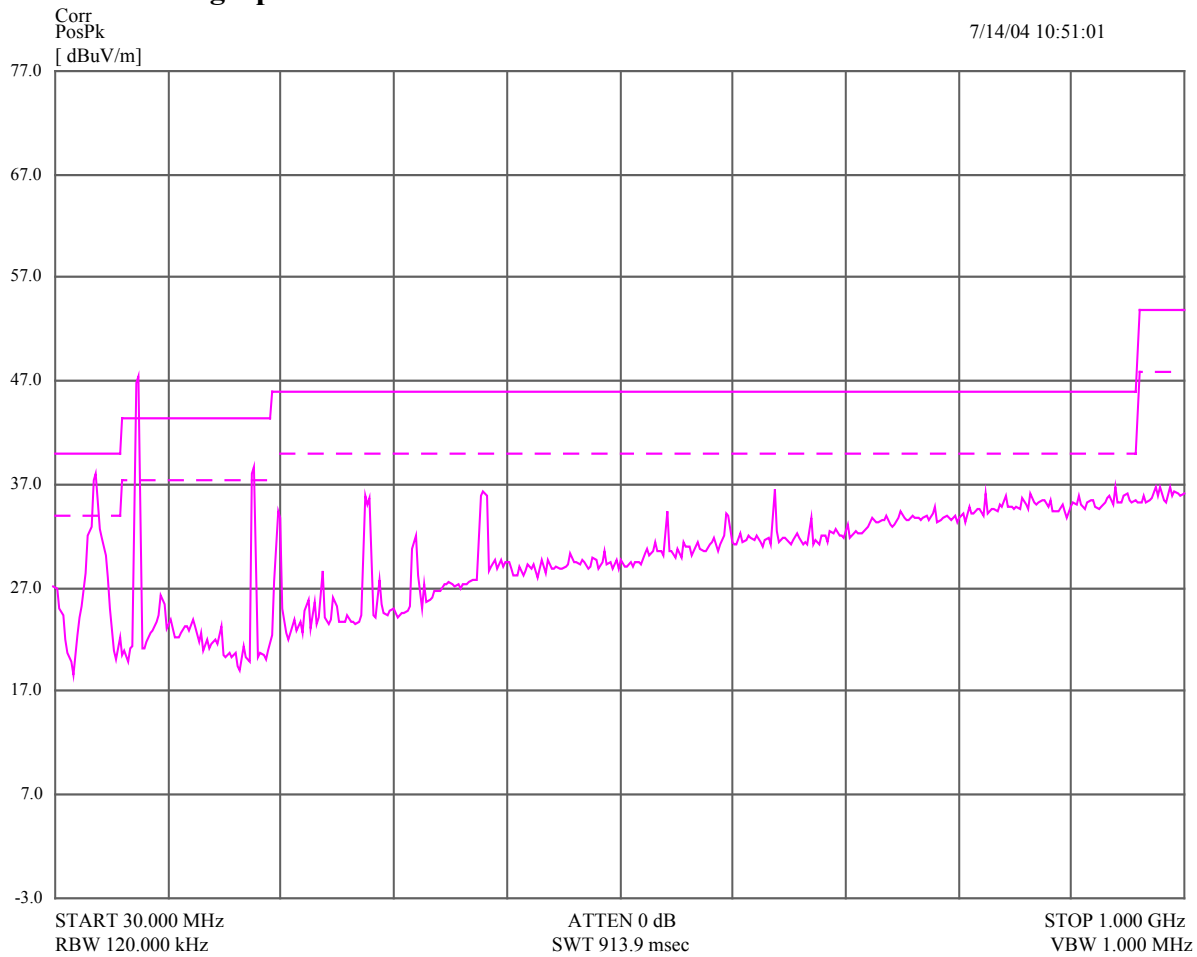
Receiver graph of Radiated Emissions at 3 m



6.2. Channel 98.1 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
60.357248	35.10	40.00	-4.90	Horz	404	39	PASS
196.191248	37.58	43.50	-5.92	Horz	179	33	PASS
215.990000	32.92	43.50	-10.58	Horz	152	139	PASS
294.303744	34.74	46.00	-11.26	Horz	127	18	PASS
392.385504	34.16	46.00	-11.84	Horz	96	324	PASS

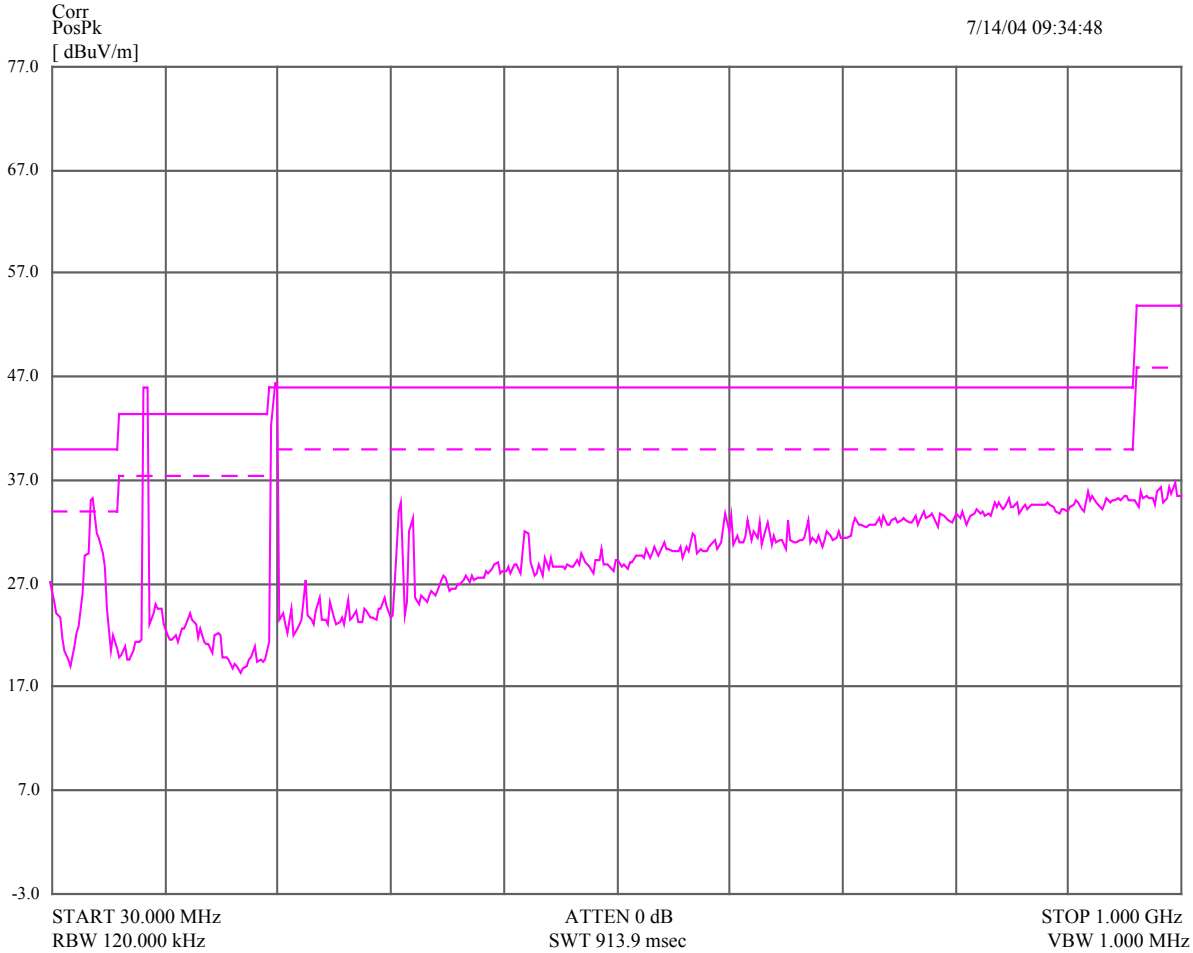
Receiver graph of Radiated Emissions at 3 m



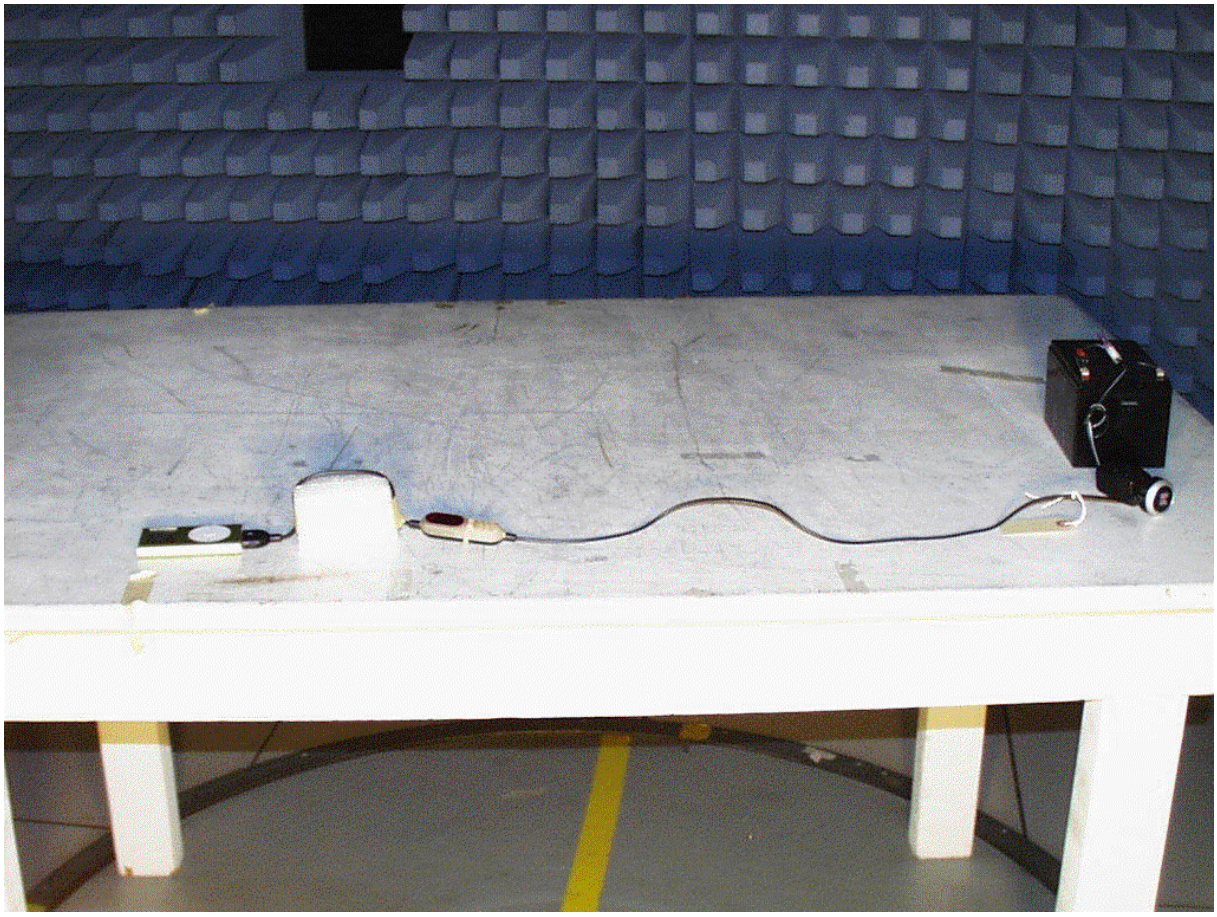
6.3. Channel 107.9 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
60.356500	35.15	40.00	-4.85	Horz	404	28	PASS
215.778256	43.48	43.50	-0.02	Horz	97	321	PASS
323.696992	37.40	46.00	-8.60	Horz	97	329	PASS

Receiver graph of Radiated Emissions at 3 m



6.4 Photographs of Test Set-Up



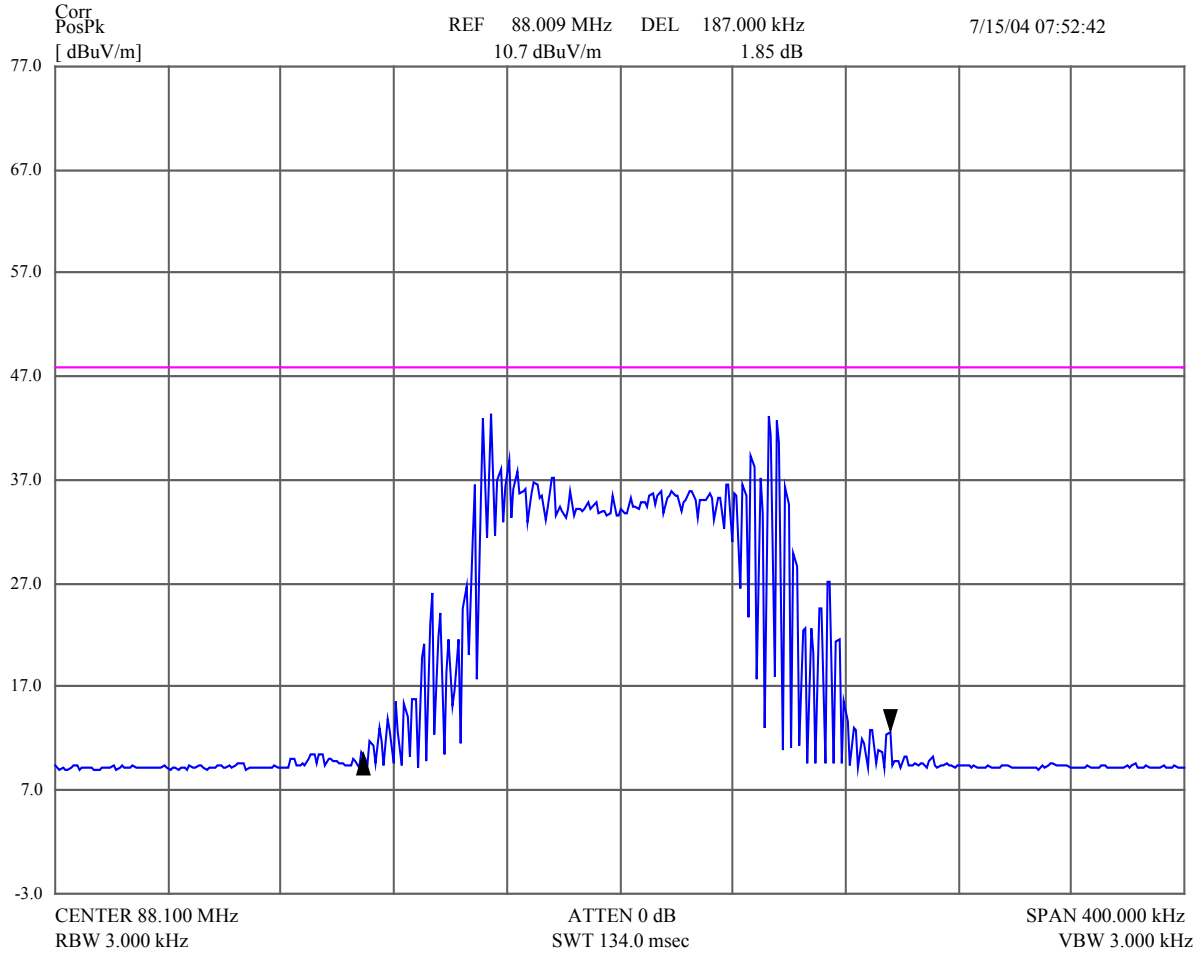
7.0 Occupied channel bandwidth

Test Requirements:	**FCC Part 15 : Subclause 15.239**
Test Method:	**ANSI C63.4: 2000**
	FCC Part 2 : Subclause 2.1049 © (1)
Limit :	**200 kHz**

The channel Bandwidth (BW) is defined as the minimum declared bandwidth within which the transmitter's necessary bandwidth can be contained.

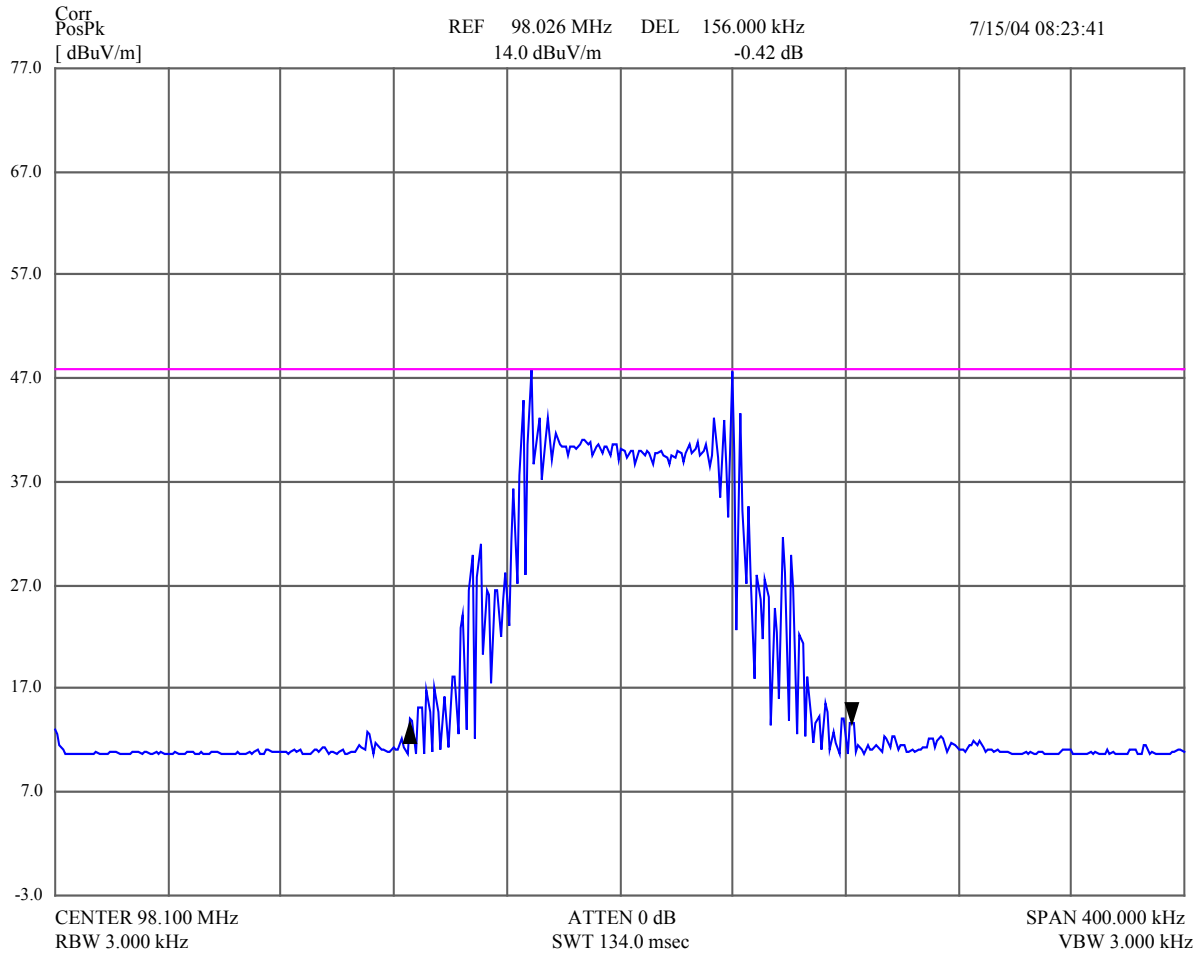
1. The Transmitter was adjusted to work at the selected channels –88.1 MHz, 98.1 MHz and 107.9 MHz. All measurements were conducted by the HP 85462A Spectrum Analyzer;
2. The test Signal generator HP651B was connected to the audio input of the EUT. The fundamental frequency is modulated by 1 kHz sinewave with input level equals to the limiting threshold = 1,02 Vp-p
3. The Channel BW was measured at an amplitude level reduced from the reference level by the 26 dB. :

7.1. Channel 88.1 MHz



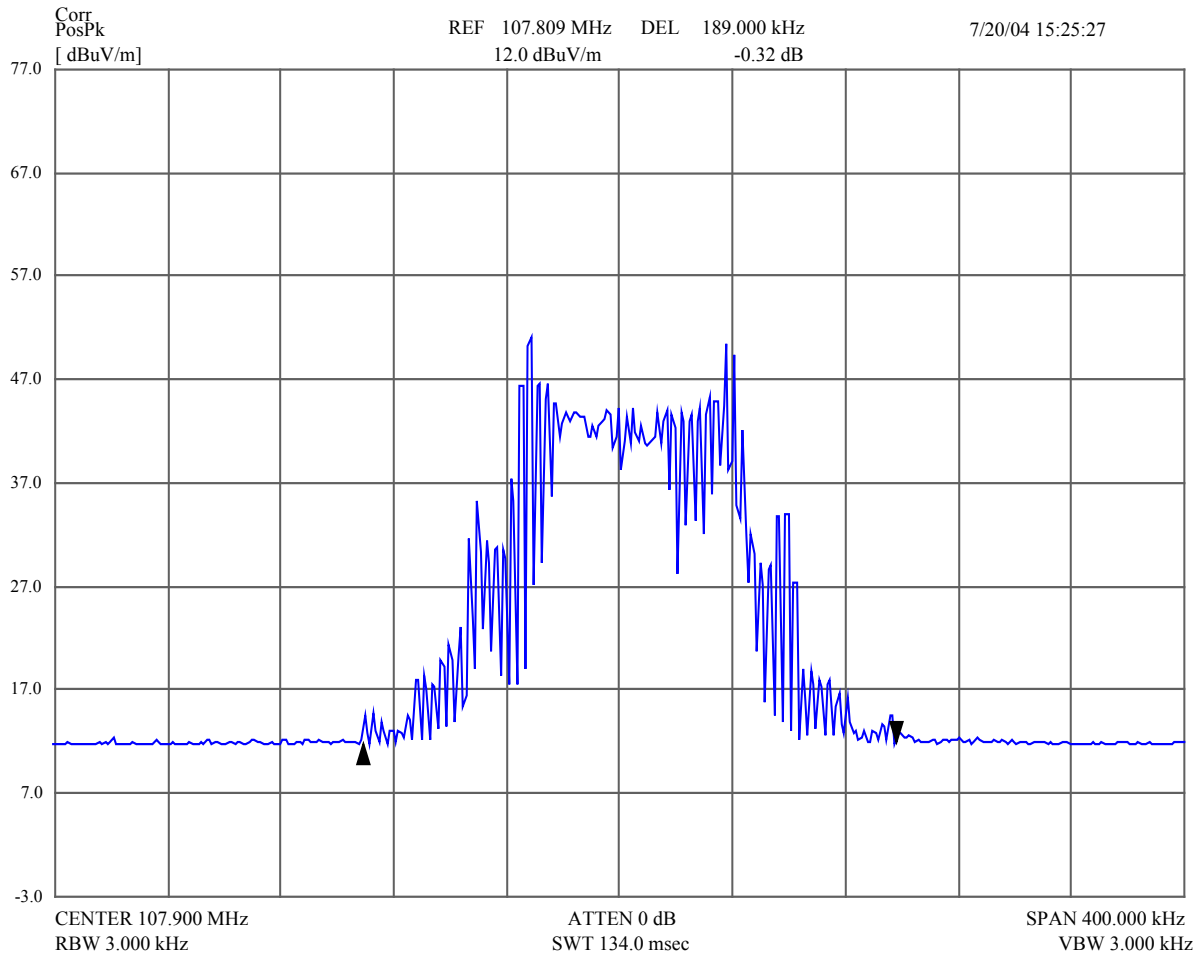
The plot shows the 26 dB bandwidth equals 187 kHz

7.2. Channel 98.1 MHz



The plot shows the 26 dB bandwidth equals 156 kHz

7.3. Channel 107.9 MHz



The plot shows the wholly bandwidth equals 189 kHz

7.4 Photographs of Test Set-Up