



Report No.: 030646 rev.01 US  
FCC ID: RJE160732-00  
Client: Monster, LLC

023



NVLAP LAB CODE: 200413-0

October 9, 2003

## Test Record

Product Verification  
According to FCC Part 15 Subparts C

for

MONSTER, LLC  
MODEL: 160732-00

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## Revision History

Revision	Date	Description of Changes	Author
0.1	9 Oct. 2003	Initial document	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:

**Wireless Audio FM Transmitter for personal use.**

Model :

**160732-00**

The EUT was tested in full compliance with the FCC Regulations using the methods of FCC Part 15 Subpart C “Intentional Radiators”; ANSI C63.4: 2000 and Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”. The results of the testing indicate that the MSF0001 met the Part 15 C limits and requirements.

## 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:  
WIRELESS AUDIO FM TRANSMITTER FOR PERSONAL USE. MODEL : 160732-00 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

Report approved by:



Leon Kogan  
Technical Director,

JMR Compliance Engineering, 20400 Plummer Street, Chatsworth CA 91311.  
**E-mail:**[emc@jmr.com](mailto: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: Wireless Audio FM Transmitter for personal use  
Model: 160732-00  
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: 09/22/03 – 09/25/03  
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 eight (8) available channels. Pressing switch will increment the frequency to the next channel.

There is no ON/OFF switch for this product. Circuit goes ON when product is plugged to automobile cigarette lighter outlet. This product also supplies 12v operating power to MP3 player.

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, 88.3, 88.5, 88.7, 88.9, 89.1, 89.3, 89.5 MHz.

**Clock frequencies :** 7.6 MHz

**Power Supply :** External 12VDC battery.

#### **3.2 Test Run**

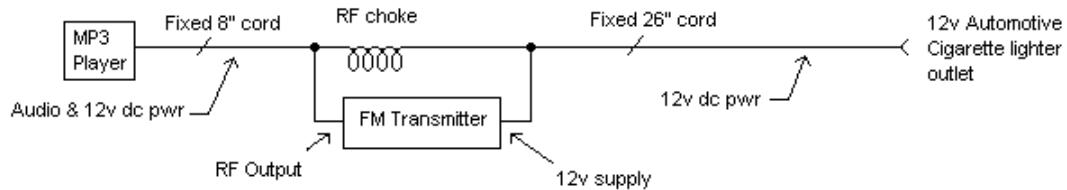
- 1) The EUT was connected through Monster Stubby cigarette lighter connector to the 12VDC battery  
Apple Ipod, as a standard MP3 player, was connected to the appropriate input/output of the EUT;
- 2) Test Oscillator HP 651B had been connected to the Aux In input of the docking connector when it was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

For test purposes the following three channels were selected for measurements :

88.1 MHz                    88.7 MHz                    89.5 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	

### 3.5 Cabling Configuration

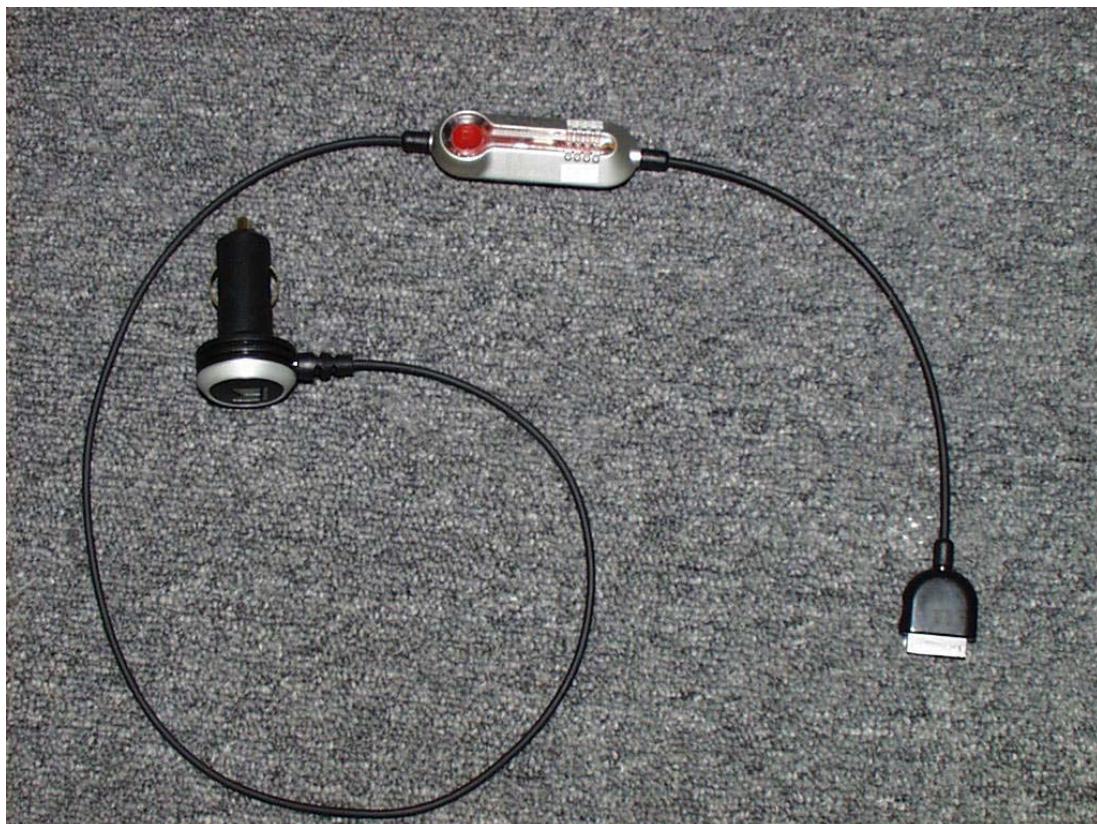
#### Power Cords:

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: WIRELESS AUDIO FM TRANSMITTER.  
MODEL : 160732-00**

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**EUT: WIRELESS AUDIO FM TRANSMITTER.  
MODEL : 160732-00  
FM Modulator  
Top View**

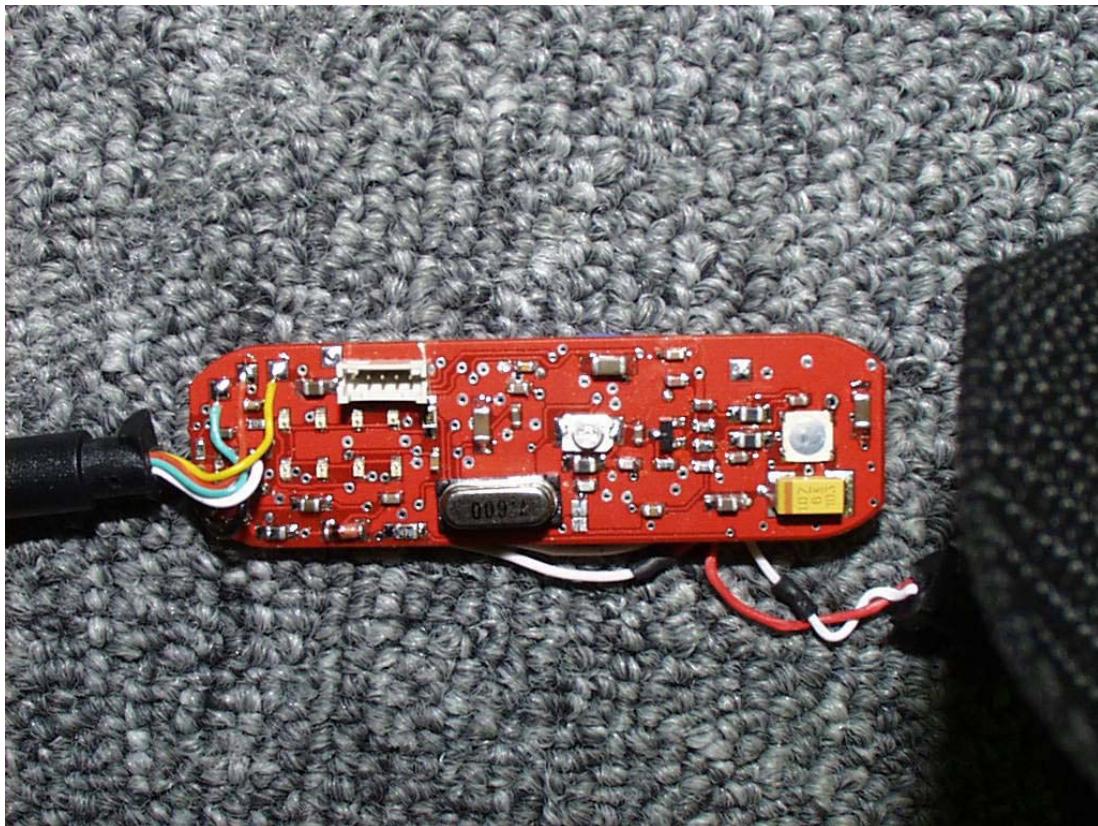
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**Client: Monster, LLC**  
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**EUT: WIRELESS AUDIO FM TRANSMITTER.**  
**MODEL : 160732-00**  
**FM Modulator**  
**Bottom View**

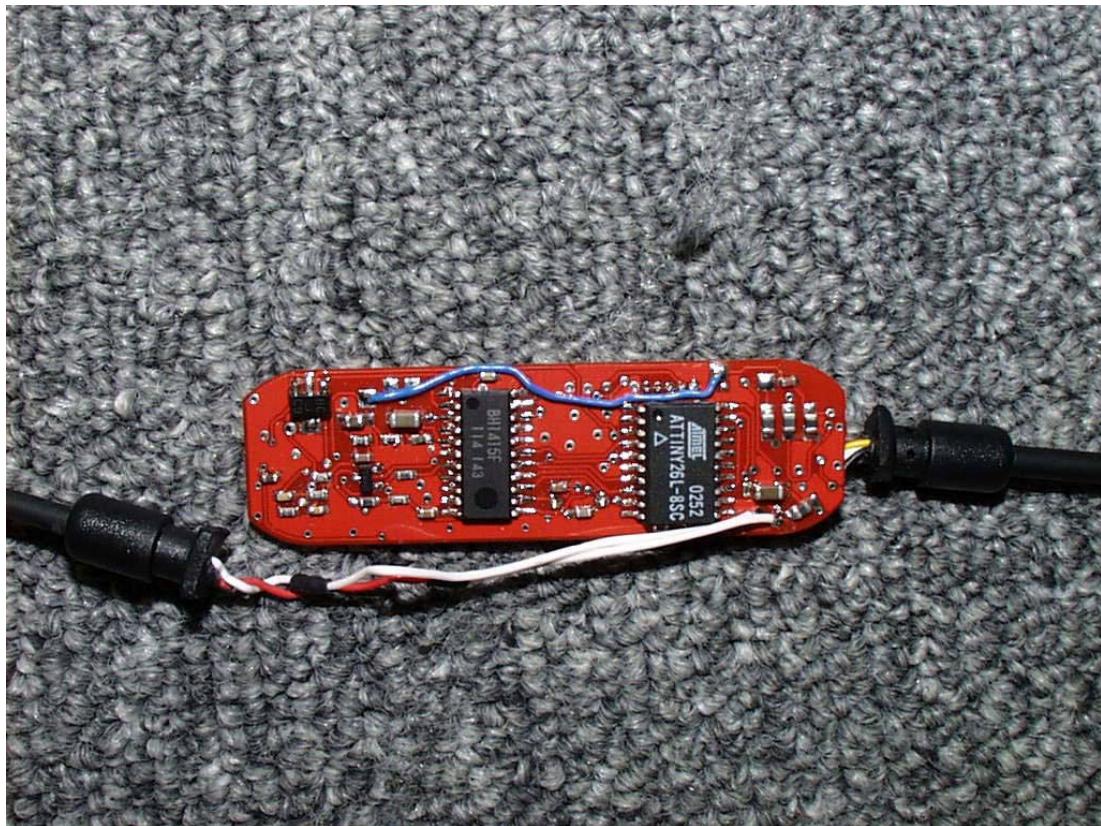


**EUT: WIRELESS AUDIO FM TRANSMITTER.**  
**MODEL : 160732-00**  
**FM Modulator**  
**Open enclosure**



**EUT: WIRELESS AUDIO FM TRANSMITTER.**  
**MODEL : 160732-00**

**FM Modulator**  
**PCB components side**



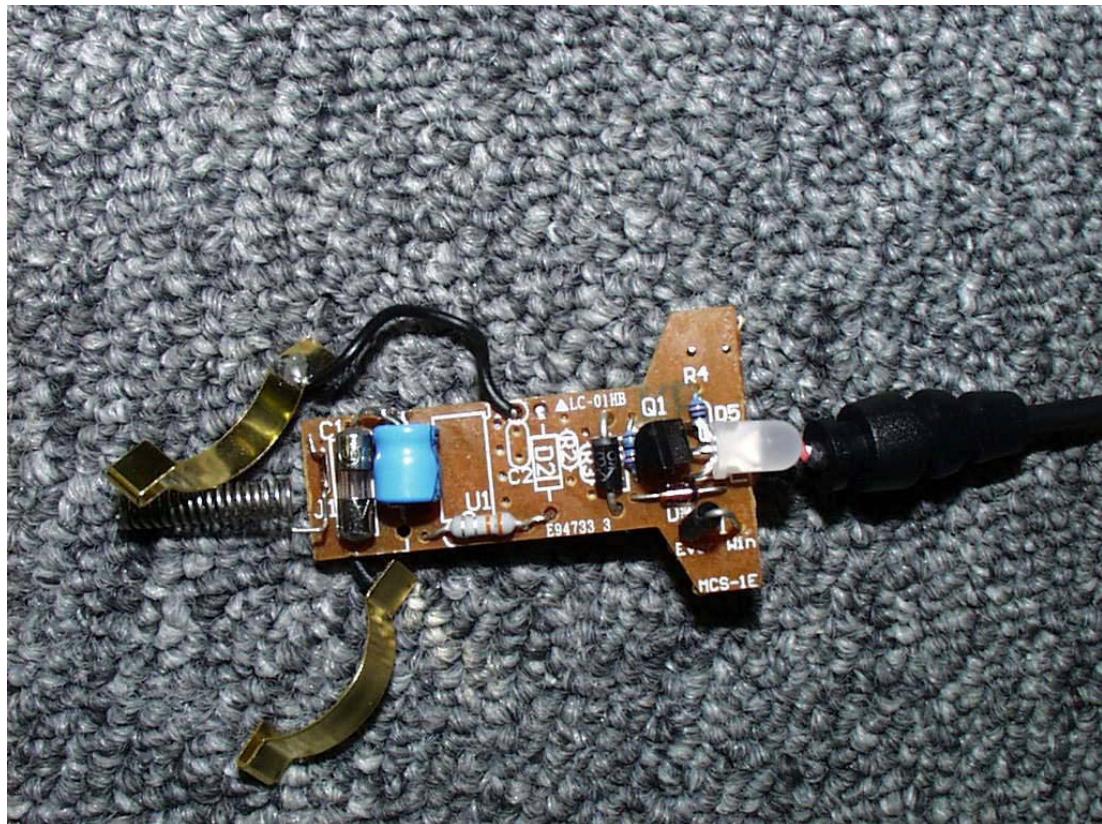
**EUT: WIRELESS AUDIO FM TRANSMITTER.  
MODEL : 160732-00  
FM Modulator  
PCB solder side**



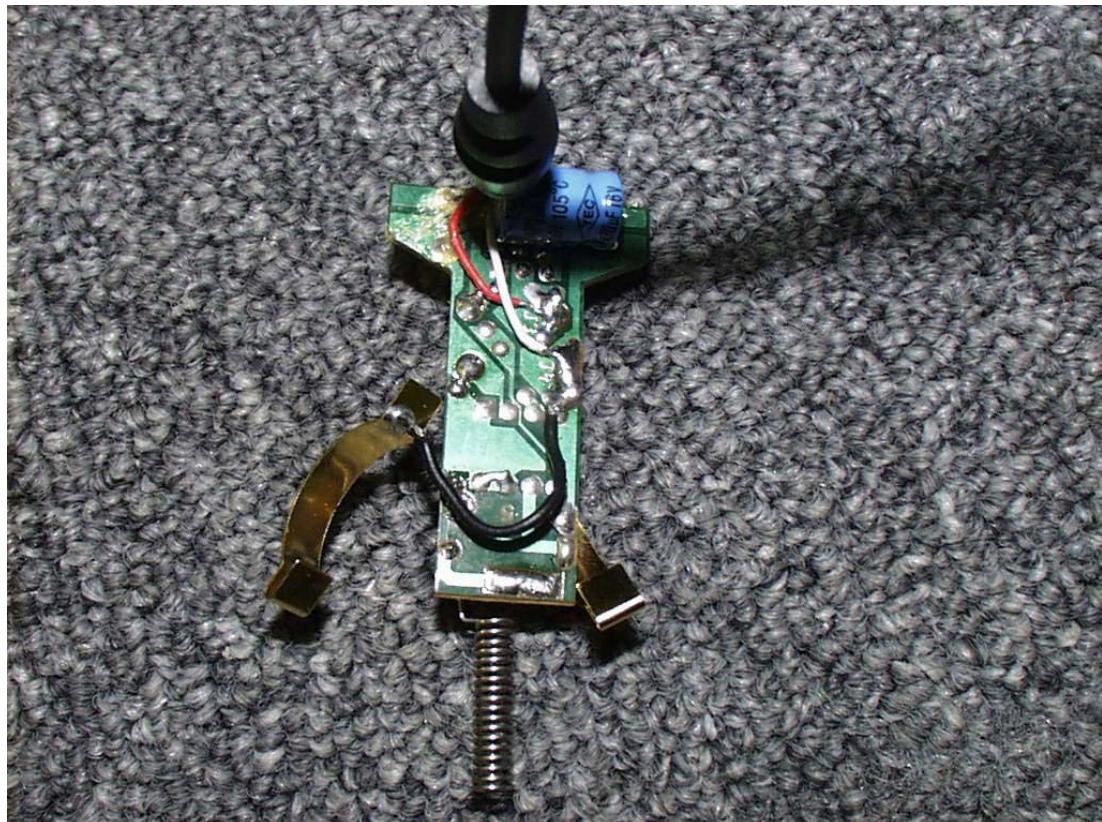
**EUT: WIRELESS AUDIO FM TRANSMITTER.  
MODEL : 160732-00  
Monster Stubby Cigarette Lighter connector**



**EUT: WIRELESS AUDIO FM TRANSMITTER.**  
**MODEL : 160732-00**  
**Monster Stubby Cigarette Lighter connector**  
**Open covers**



**EUT: WIRELESS AUDIO FM TRANSMITTER.**  
**MODEL : 160732-00**  
**Monster Stubby Cigarette Lighter connector**  
**PCB components side**



**EUT: WIRELESS AUDIO FM TRANSMITTER.**

**MODEL : 160732-00**

**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	06/21/03	06/21/04
Analyzer	HP85462A	3325A00120	04/11/03	04/11/04
Cable 2	8268	CBL-002	06/21/03	06/21/04
Preselector	HP85460A	3330A00117	04/11/03	04/11/04
Qpeak Adapter	HP85462 Internal	Internal	04/11/03	04/11/04
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	08/08/02	08/08/03
DRG Horn Antenna	SAS-200/571	175	10/18/02	10/18/03
Log-Periodic Antenna	CBL6111	11167	11/01/02	11/01/03
Cable1	RG-214/U	CBL-001	06/21/03	06/21/04
Shielded Semi-Anechoic Chamber	RANTEC	N/A	N/A	N/A
Digital Oscilloscope	DL1520	26WZ0171	12/16/02	12/16/03
Temperature and Humidity Recorder	Dickson TH8-24C	5097755	09/18/03	09/18/05

## **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, 88.7MHz, and 89.5 MHz Field Strength of Emissions had been measured.

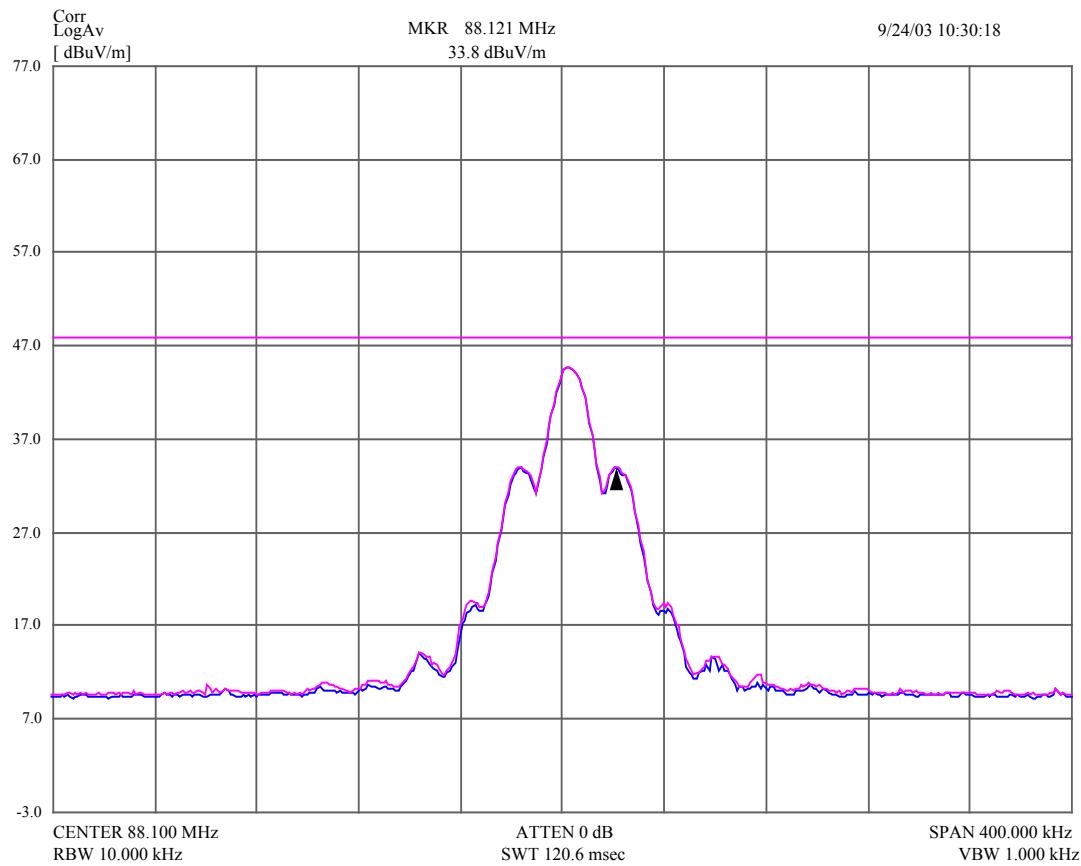
## 5.1. Channel 88.1 MHz

### 5.1.1 no modulation

#### Average value data

Frequency MHz	Freq MHz	Unc dBuV/m	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.083000	0.008010	33.67	48.00	-14.33	Horz	226	9		PASS
88.101000	0.008010	44.30	48.00	-3.70	Horz	226	9		PASS
88.121000	0.008010	33.81	48.00	-14.19	Horz	226	9		PASS

#### Receiver graph of Field Strength of Emissions at 3 m

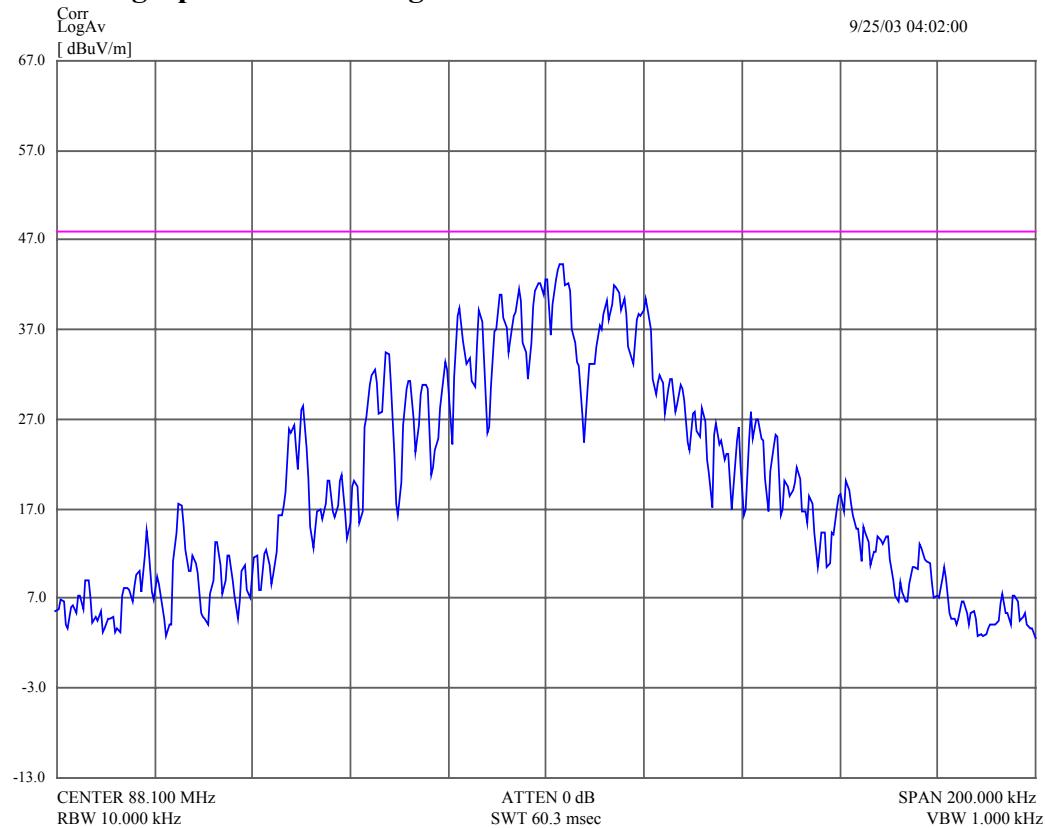


### 5.1.2 with modulation

#### Average value data

Frequency MHz	Freq Unc MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.033000	0.004010	12.85	48.00	-35.15	Horz	226	18	PASS
88.059000	0.004010	19.72	48.00	-28.28	Horz	226	18	PASS
88.073504	0.004010	33.53	48.00	-14.47	Horz	226	18	PASS
88.079504	0.004010	33.09	48.00	-14.91	Horz	226	18	PASS
88.094000	0.004010	44.76	48.00	-3.24	Horz	226	18	PASS
88.100496	0.004010	44.60	48.00	-3.40	Horz	226	18	PASS
88.107000	0.004010	43.65	48.00	-4.35	Horz	226	18	PASS
88.117000	0.004010	36.51	48.00	-11.49	Horz	226	18	PASS
88.125504	0.004010	35.65	48.00	-12.35	Horz	226	18	PASS
88.148496	0.004010	24.10	48.00	-23.90	Horz	226	18	PASS
88.168000	0.004010	12.84	48.00	-35.16	Horz	226	18	PASS

#### Receiver graph of Field Strength of Emissions at 3 m



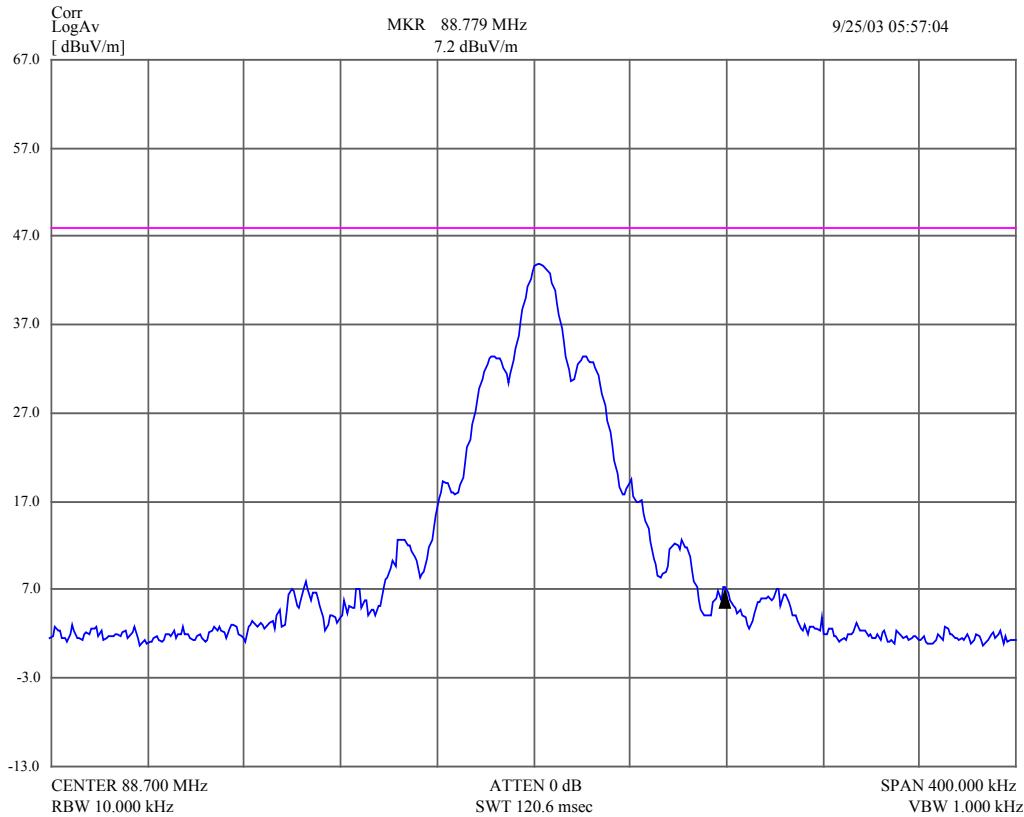
## 5.2. Channel 88.7 MHz

### 5.2.1 no modulation

#### Average value data

Frequency MHz	Freq MHz	Unc	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
<hr/>									
88.645000	0.008010	12.53	48.00	-35.47	Horz	208	15		PASS
88.664000	0.008010	19.05	48.00	-28.95	Horz	208	15		PASS
88.683000	0.008010	33.36	48.00	-14.64	Horz	208	15		PASS
88.702000	0.008010	43.83	48.00	-4.17	Horz	208	15		PASS
88.723000	0.008010	32.95	48.00	-15.05	Horz	208	15		PASS
88.740000	0.008010	18.92	48.00	-29.08	Horz	208	15		PASS
88.761000	0.008010	11.59	48.00	-36.41	Horz	208	15		PASS

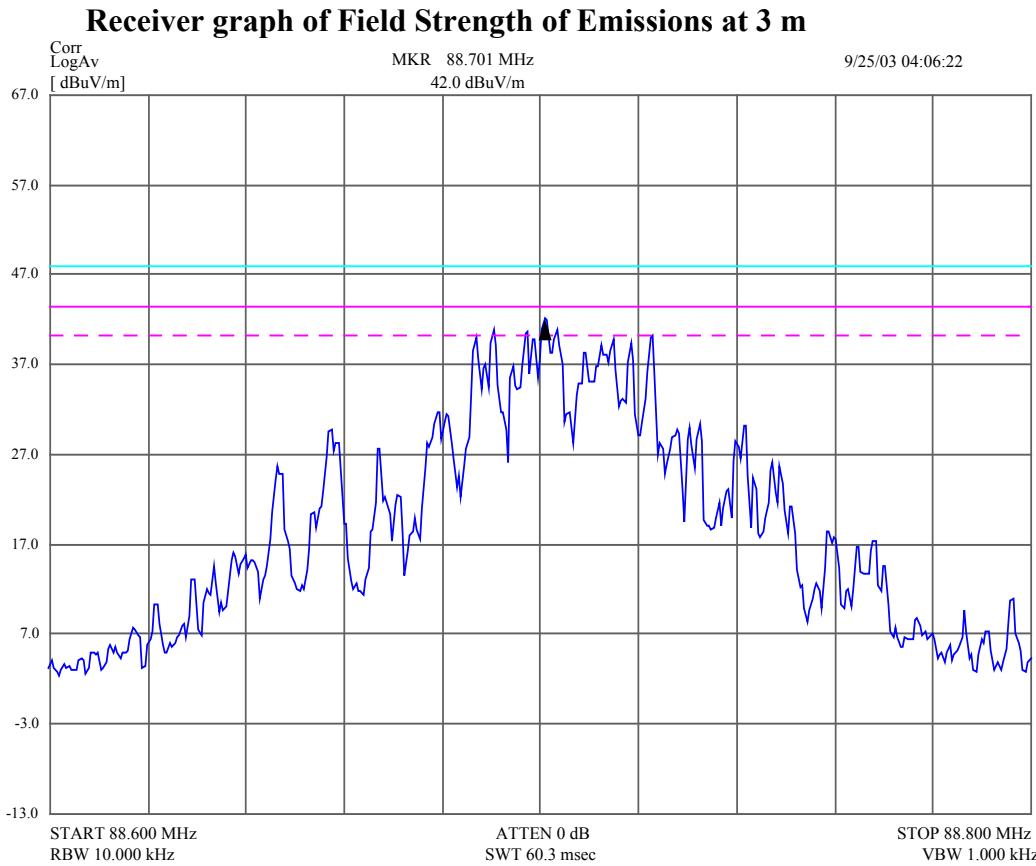
#### Receiver graph of Field Strength of Emission at 3 m



### 5.2.2 with modulation

#### Average value data

Frequency MHz	Freq MHz	Unc	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.646496	0.004010	25.62	48.00	-22.38	Horz	226	18		PASS
88.657504	0.004010	29.67	48.00	-18.33	Horz	226	18		PASS
88.667504	0.004010	27.48	48.00	-20.52	Horz	226	18		PASS
88.679504	0.004010	31.53	48.00	-16.47	Horz	226	18		PASS
88.690496	0.004010	40.80	48.00	-7.20	Horz	226	18		PASS
88.701000	0.004010	42.04	48.00	-5.96	Horz	226	18		PASS
88.715000	0.004010	39.71	48.00	-8.29	Horz	226	18		PASS
88.723000	0.004010	40.05	48.00	-7.95	Horz	226	18		PASS
88.732496	0.004010	30.22	48.00	-17.78	Horz	226	18		PASS
88.742000	0.004010	30.20	48.00	-17.80	Horz	226	18		PASS



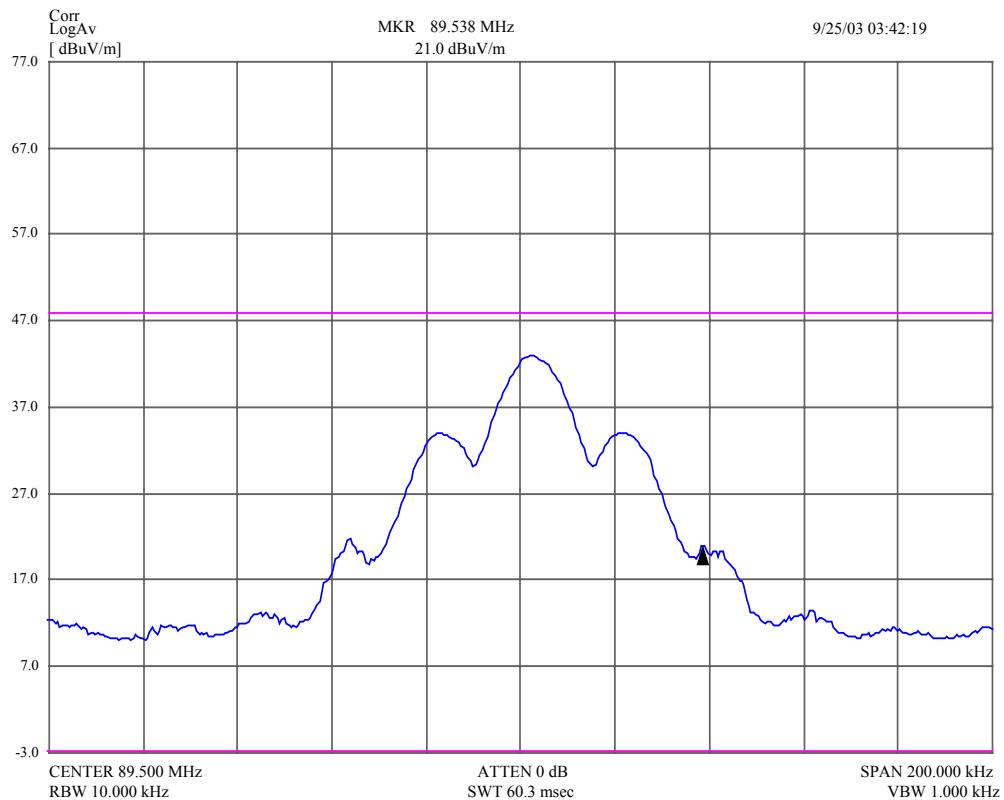
## 5.3. Channel 89.5 MHz

### 5.3.1 no modulation

#### Average value data

Frequency MHz	Freq MHz	Unc MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
89.463504	0.004010	21.55	48.00	-26.45	Horz	226	18		PASS
89.482000	0.004010	33.68	48.00	-14.32	Horz	226	18		PASS
89.502496	0.004010	42.83	48.00	-5.17	Horz	226	18		PASS
89.522000	0.004010	33.93	48.00	-14.07	Horz	226	18		PASS
89.538496	0.004010	20.95	48.00	-27.05	Horz	226	18		PASS

#### Receiver graph of Field Strength of Emissions at 3 m

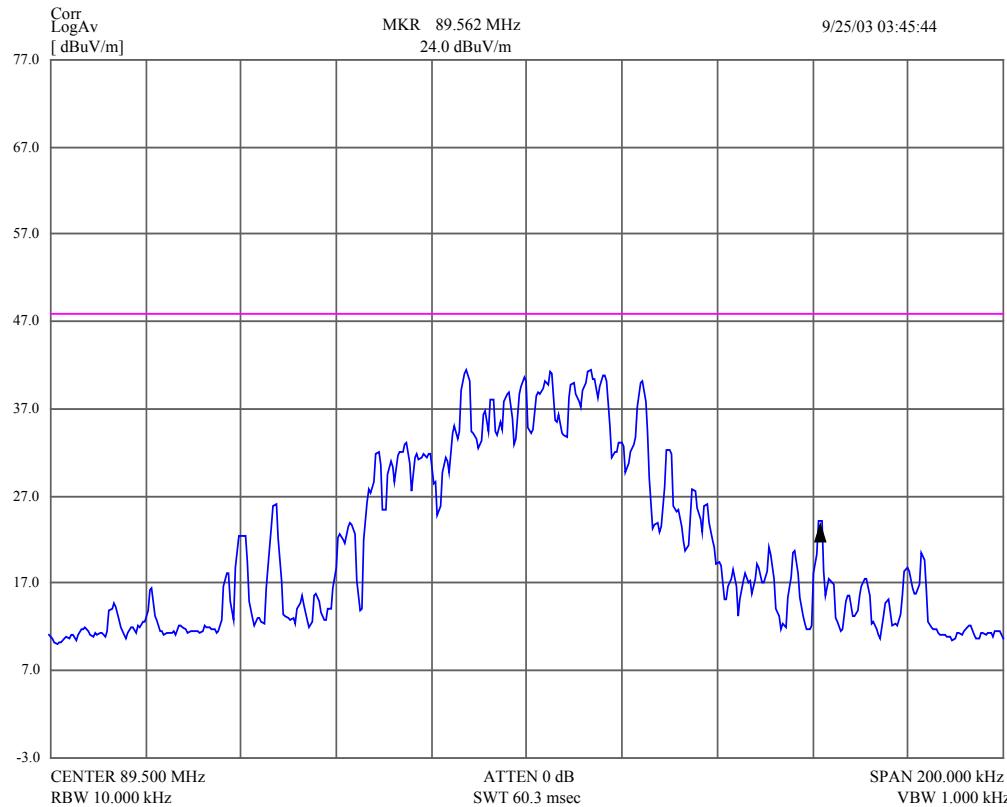


### 5.3.2 with modulation

#### Average value data

Frequency MHz	Freq MHz	Unc	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
89.447000	0.004010	25.87	48.00	-22.13	Horz	226	18		PASS
89.468496	0.004010	31.70	48.00	-16.30	Horz	226	18		PASS
89.487504	0.004010	41.41	48.00	-6.59	Horz	226	18		PASS
89.499504	0.004010	40.47	48.00	-7.53	Horz	226	18		PASS
89.505000	0.004010	41.10	48.00	-6.90	Horz	226	18		PASS
89.509504	0.004010	39.70	48.00	-8.30	Horz	226	18		PASS
89.513504	0.004010	41.31	48.00	-6.69	Horz	226	18		PASS
89.524496	0.004010	40.01	48.00	-7.99	Horz	226	18		PASS
89.530000	0.004010	32.25	48.00	-15.75	Horz	226	18		PASS
89.535504	0.004010	27.54	48.00	-20.46	Horz	226	18		PASS
89.561504	0.004010	23.96	48.00	-24.04	Horz	226	18		PASS

#### Receiver graph of Field Strength of Emissions at 3 m



#### 5.4 Photographs of Test Set-Up



## 6.0 Radiated Emissions.

<b>Test Requirements:</b>	FCC Part 15 : Subclause 15.209
<b>Test Method:</b>	ANSI C63.4: 2000
<b>Limit :</b>	FCC Part 15 : Subclause 15.209
<b>Mode of operation:</b>	normal

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.

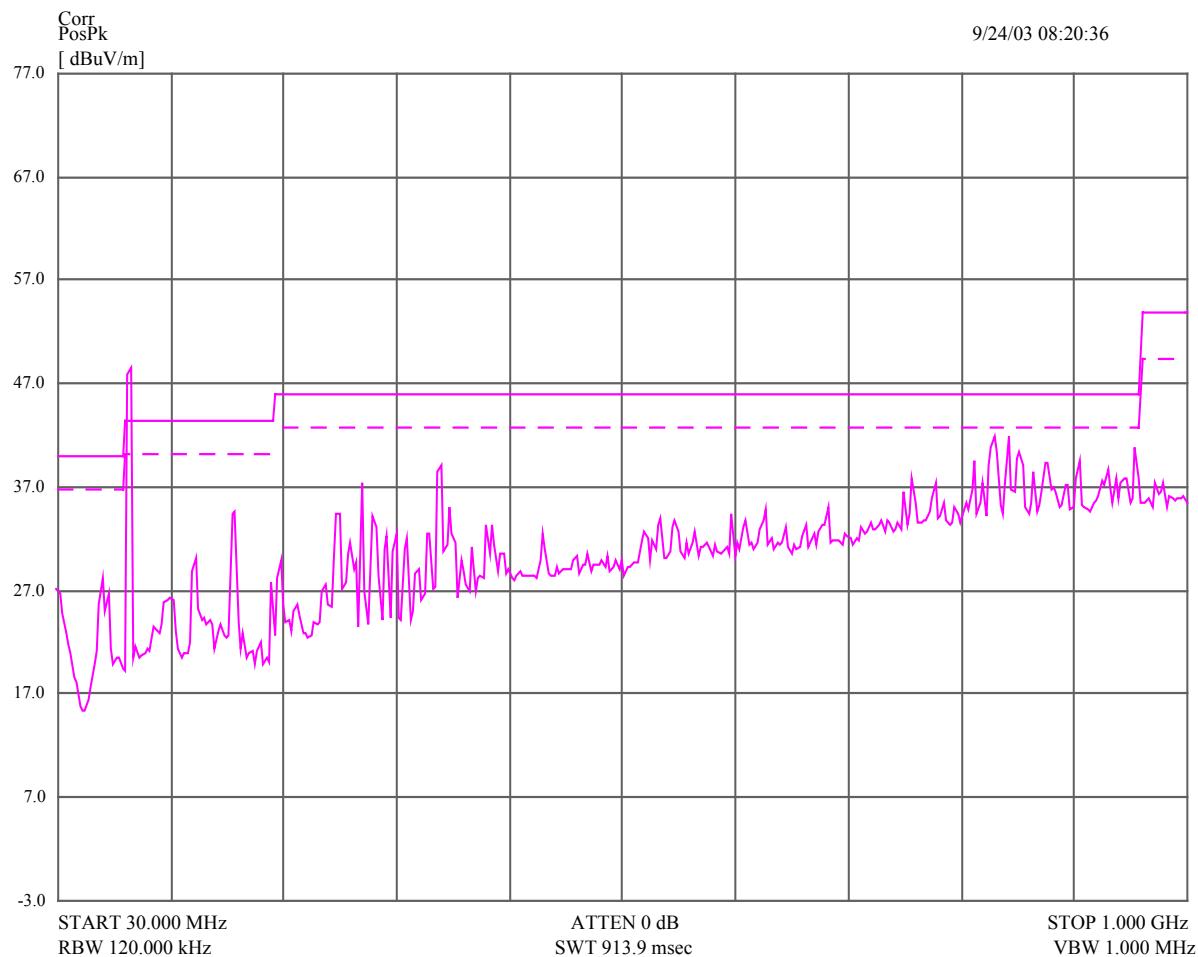
After determination of the maximum emissions configuration the distance of the EUT to the scanning antenna was set to 3 meters.

At each of three selected channels 88.1 MHz, 88.7MHz, and 89.5 MHz Radiated Emissions had been measured.

## 6.1. Channel 88.1 MHz

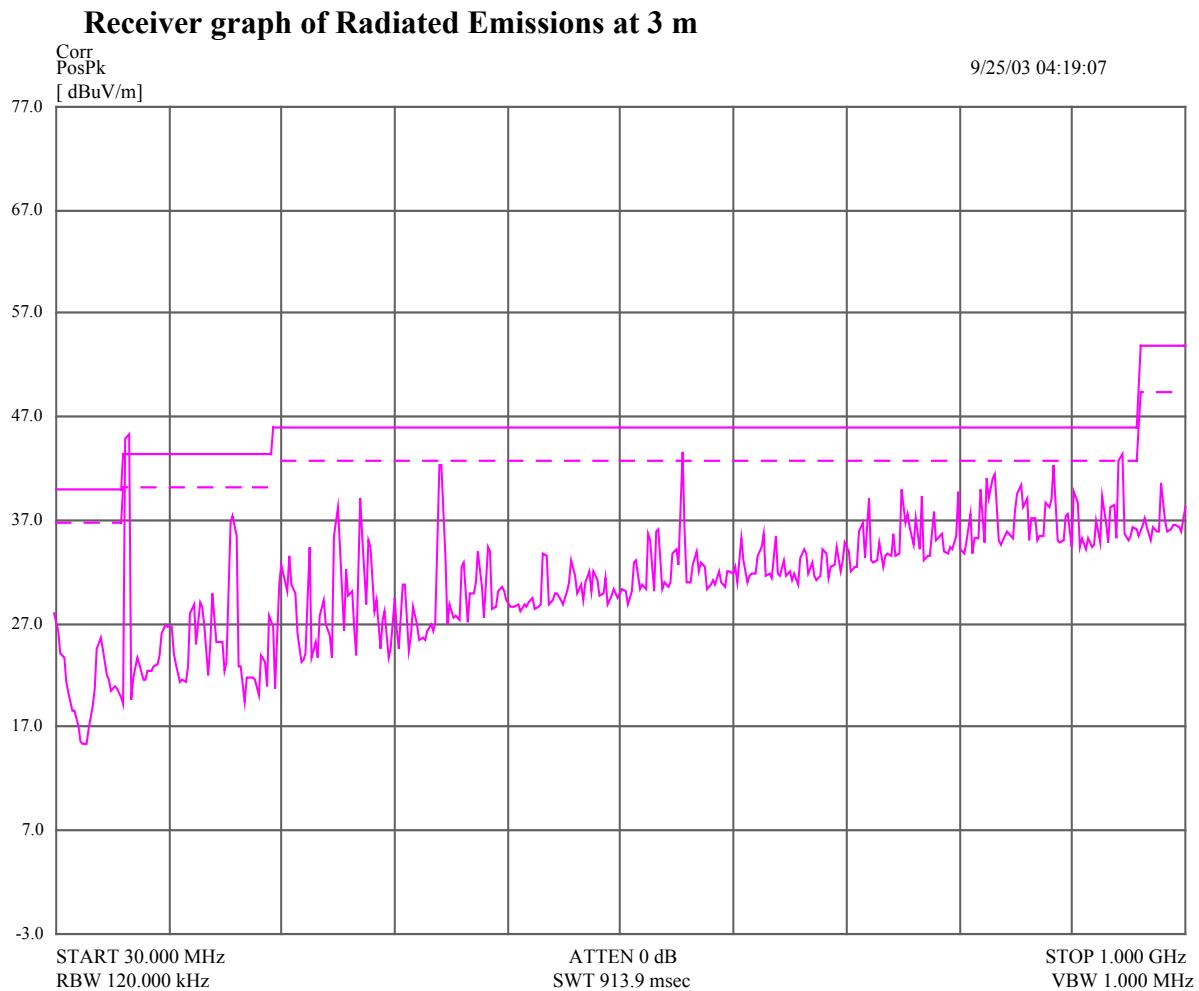
Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
176.176000	32.74	43.50	-10.76	Horz	232	352	PASS
264.286000	33.24	46.00	-12.76	Horz	95	157	PASS
352.401984	41.08	46.00	-4.92	Horz	127	329	PASS
440.487008	30.66	46.00	-15.34	Horz	104	173	PASS

### Receiver graph of Radiated Emissions at 3 m



## 6.2. Channel 88.7 MHz

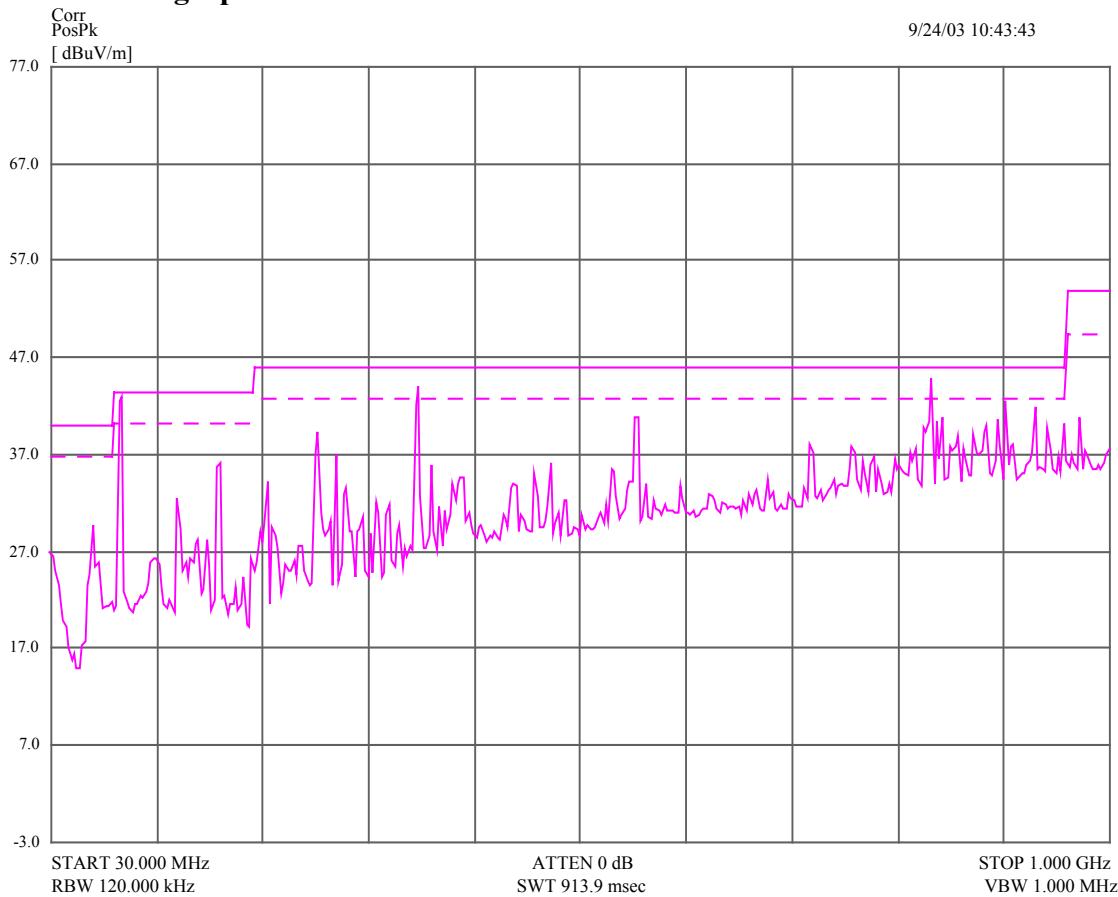
Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
177.406000	35.59	43.50	-7.91	Horz	234	346	PASS
266.136496	34.41	46.00	-11.59	Horz	171	151	PASS
354.830016	39.00	46.00	-7.00	Horz	149	162	PASS
532.175488	32.07	46.00	-13.93	Horz	169	301	PASS



### 6.3. Channel 89.5 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
178.987504	35.39	43.50	-8.11	Horz	165	352	PASS
268.502016	33.92	46.00	-12.08	Horz	118	134	PASS
357.968992	36.59	46.00	-9.41	Horz	316	314	PASS
447.496000	29.64	46.00	-16.36	Horz	95	145	PASS
536.961024	30.55	46.00	-15.45	Horz	198	18	PASS

### Receiver graph of Radiated Emissions at 3 m



#### 6.4 Photographs of Test Set-Up



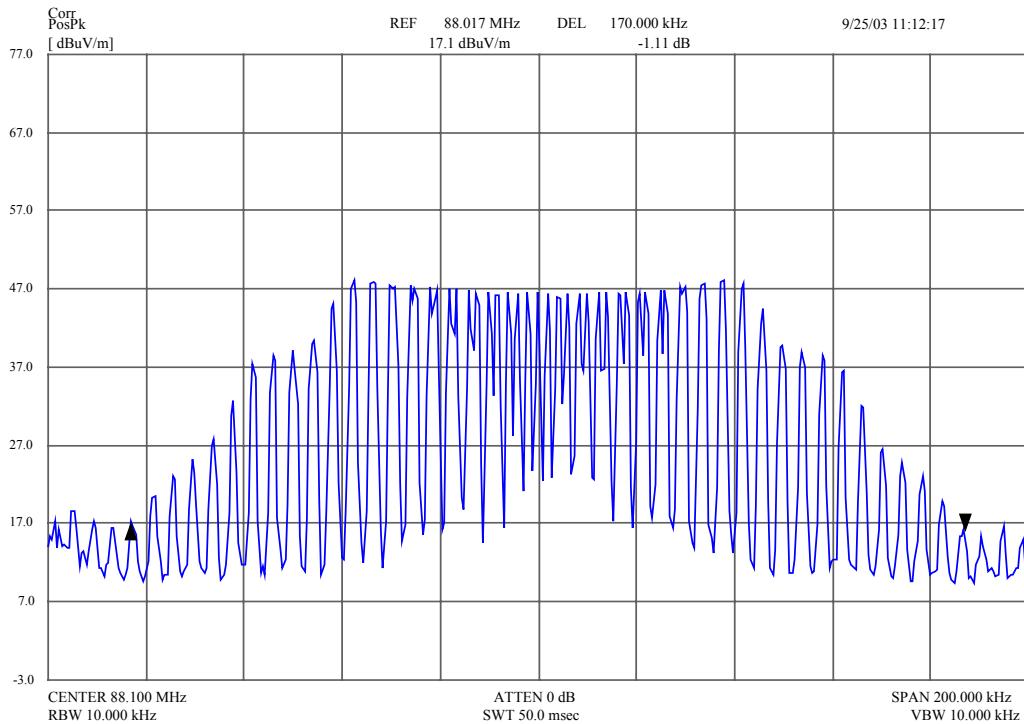
## 7.0 Occupied channel bandwidth

<b>Test Requirements:</b>	FCC Part 15 : Subclause 15.229
<b>Test Method:</b>	ANSI C63.4: 2000
<b>Limit :</b>	FCC Part 2 : Subclause 2.1049 © (1) 200 kHz

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

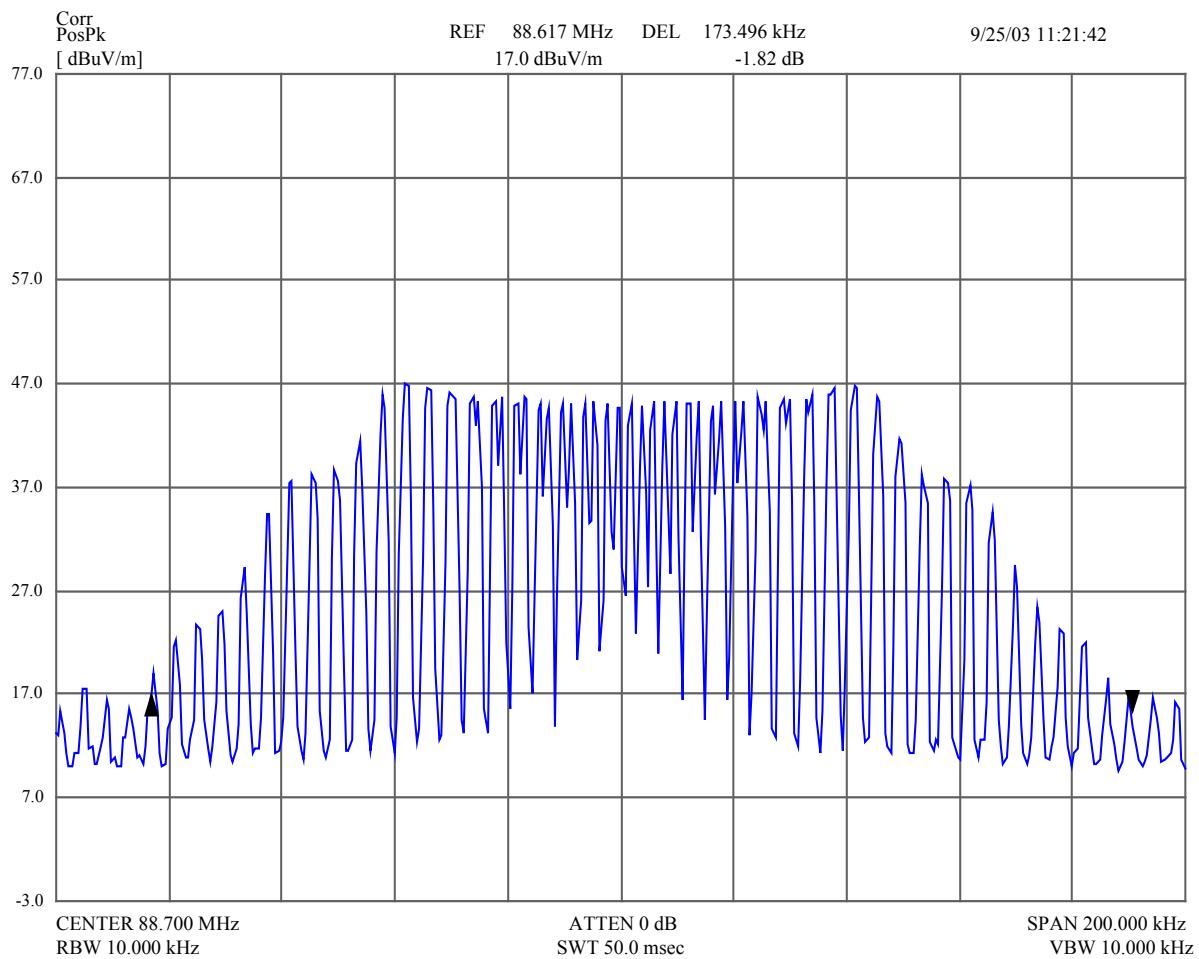
1. The Transmitter was adjusted to work at the selected channels –88.1 MHz, 88.7 MHz and 89.5 MHz. All measurements were conducted by the HP 85462A Spectrum Analyzer;
2. The test Signal generator HP651B was connected to the audio input of the EUT. The fundamental frequency is modulated by 1 kHz sinewave with input level equals to the limiting threshold
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



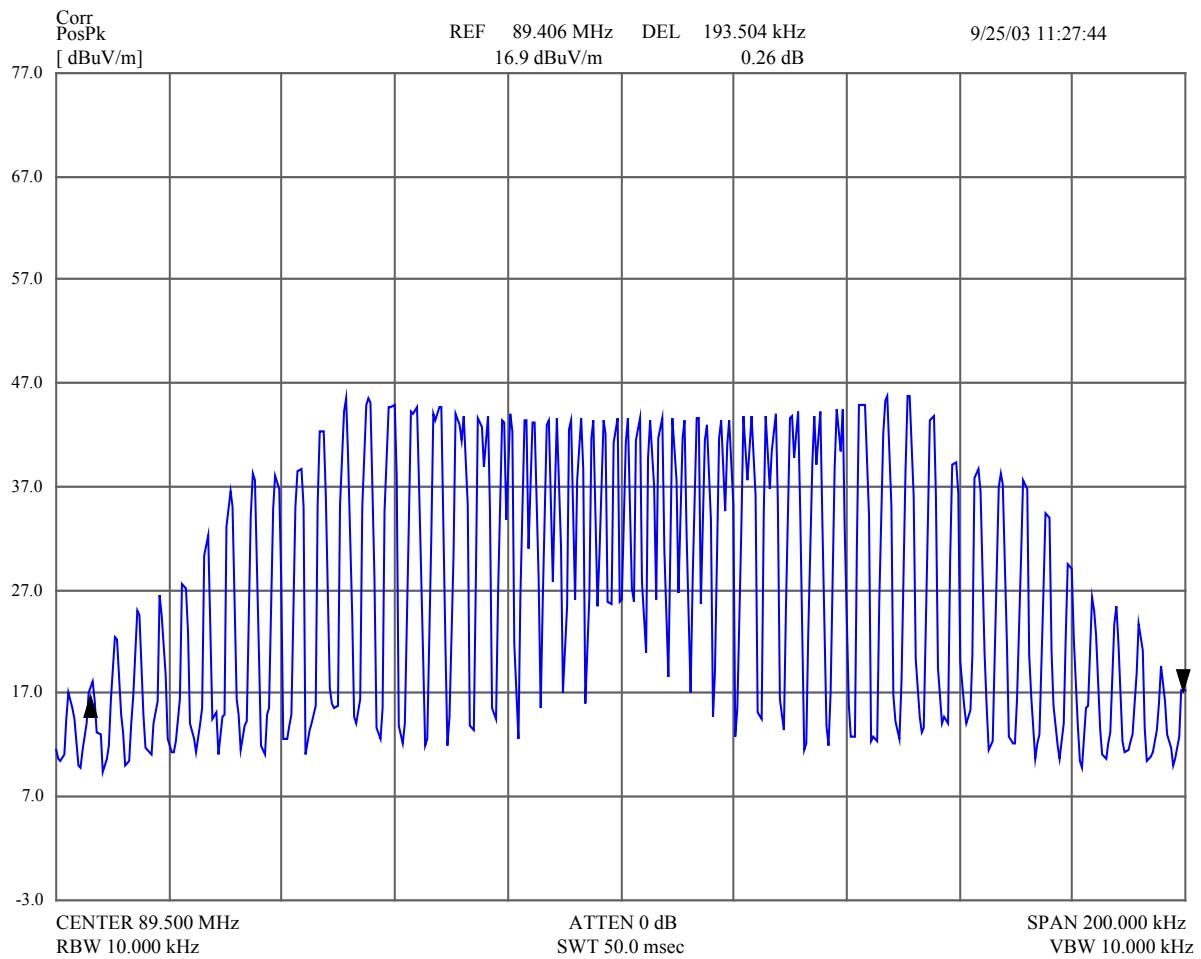
**The plot shows the 26 dB bandwidth equals 170 kHz**

## 7.2. Channel 88.7 MHz



**The plot shows the 26 dB bandwidth equals 173.5 kHz**

### 7.3. Channel 89.5 MHz



The plot shows the 26 dB bandwidth equals 193.5 kHz

#### 7.4 Photographs of Test Set-Up

