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NVLAP LAB CODE: 200413-0

February 5, 2004

Test Record

Product Verification
According to FCC Part 15 Subparts C

for

MONSTER, LLC
MODEL: 160836-00

TABLE OF CONTENTS

Revision History

Revision	Date	Description of Changes	Author
0.1	5 Febr.. 2004	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, Low Power Unlicensed Transmitter, by the FCC Part 15 Subpart C Rules and Regulations.

This EUT is designated: **Universal FM Transmitter**

Model : **160836-00**

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 160836-00 met the Part 15 C Low Power Unlicensed Transmitter 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:
Universal FM Transmitter. MODEL : 160836-00 is compliant with the following Rules and Regulations

A. 47 Code of Federal Regulations,
Part 15 Subpart C Low Power Unlicensed Transmitter
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

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

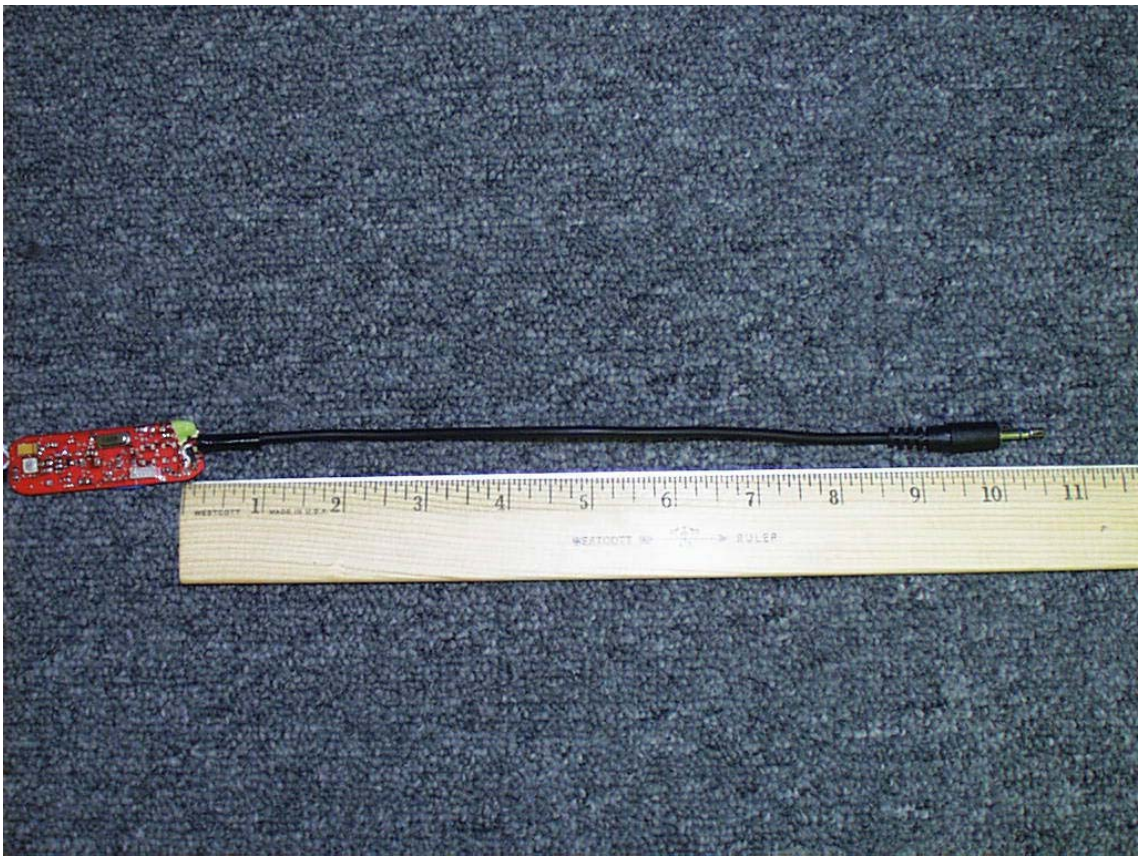
Device tested:	Universal FM Transmitter
Model:	160836-00
Equipment category:	Intentional Radiators, Low Power Unlicensed Transmitter
Accessories:	N/A
Expository Statement:	This device is intended for personal use.
Purpose of test:	Compliance to FCC Rules and Regulations, Part 15, Subpart C
Date of test:	01/15/04 – 01/21/04
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.

ANTENNA: Wires connecting to MP3 player are used as the antenna. Alteration of antenna by user is not possible. (see Fig. 1 for RF schematic of antenna)



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

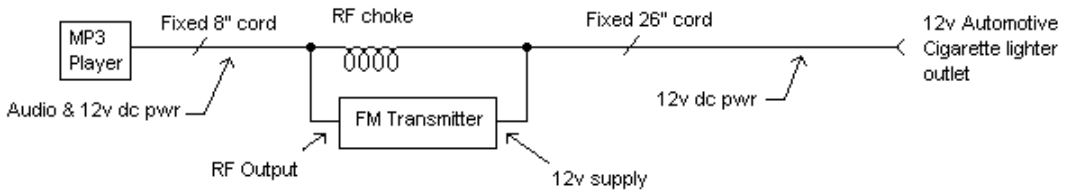


Fig. 1

3.4 Support Equipment List:

No	Equipment	Model	S/N (last 6)	Notes
1	**HP Test Oscillator**	651B	1230A08435	
2	**MP3 player**	A1040	34PNLW	Apple Ipod
3	**Standard 12VDC battery**	N/A	N/A	
	Digital Oscilloscope	Yokogawa DL1520	W20171	Cal. Due 12/16/04

3.5 Cabling Configuration

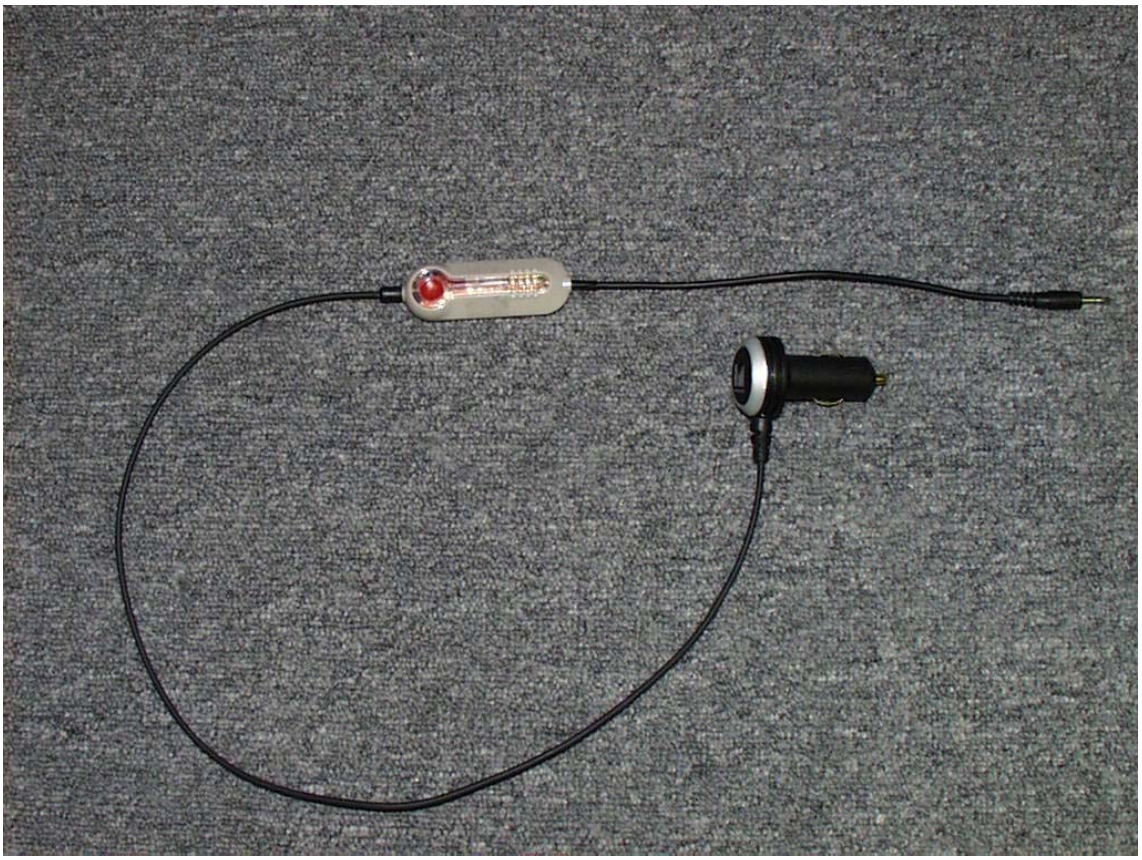
Power Cords:

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: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00

See filed concurrently Exhibits A

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00

OPEN ENCLOSURE TOP VIEW

See filed concurrently Exhibits B

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00

OPEN ENCLOSURE BOTTOM VIEW

See filed concurrently Exhibits C

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
PCB components side

See filed concurrently Exhibits D

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
PCB solder side

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
Monster Stubby Cigarette Lighter connector

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
Monster Stubby Cigarette Lighter connector
Open covers

See filed concurrently Exhibits E

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
Monster Stubby Cigarette Lighter connector
PCB components side

See filed concurrently Exhibits F

EUT: UNIVERSAL FM TRANSMITTER.
MODEL : 160836-00
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	09/04/03	09/04/04
DRG Horn Antenna	SAS-200/571	175	10/18/03	10/18/04
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	12/16/03	12/16/04
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 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.

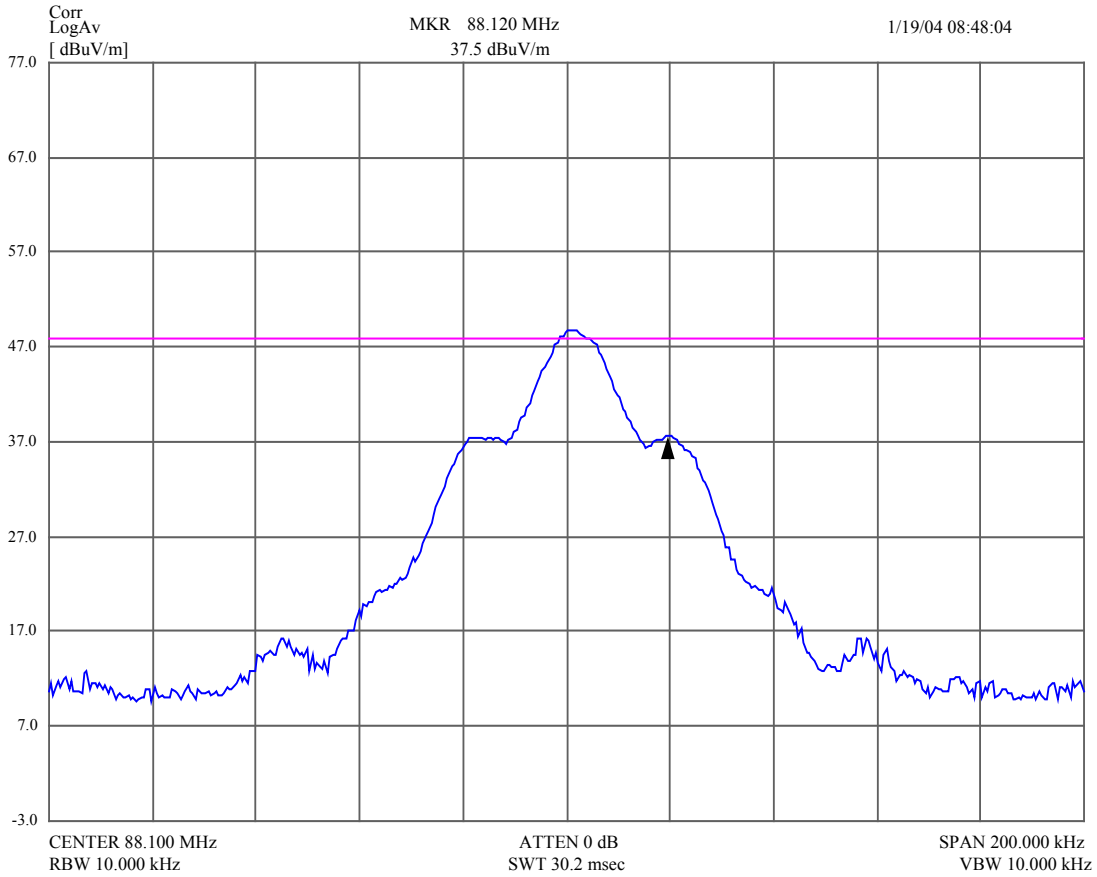
5.1. Channel 88.1 MHz

5.1.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.082496	37.36	48.00	-10.64	Horz	198	204	PASS
88.100000	47.94	48.00	-0.060	Horz	198	204	PASS
88.119504	37.46	48.00	-10.54	Horz	198	204	PASS

Receiver graph of Field Strength of Emissions at 3 m

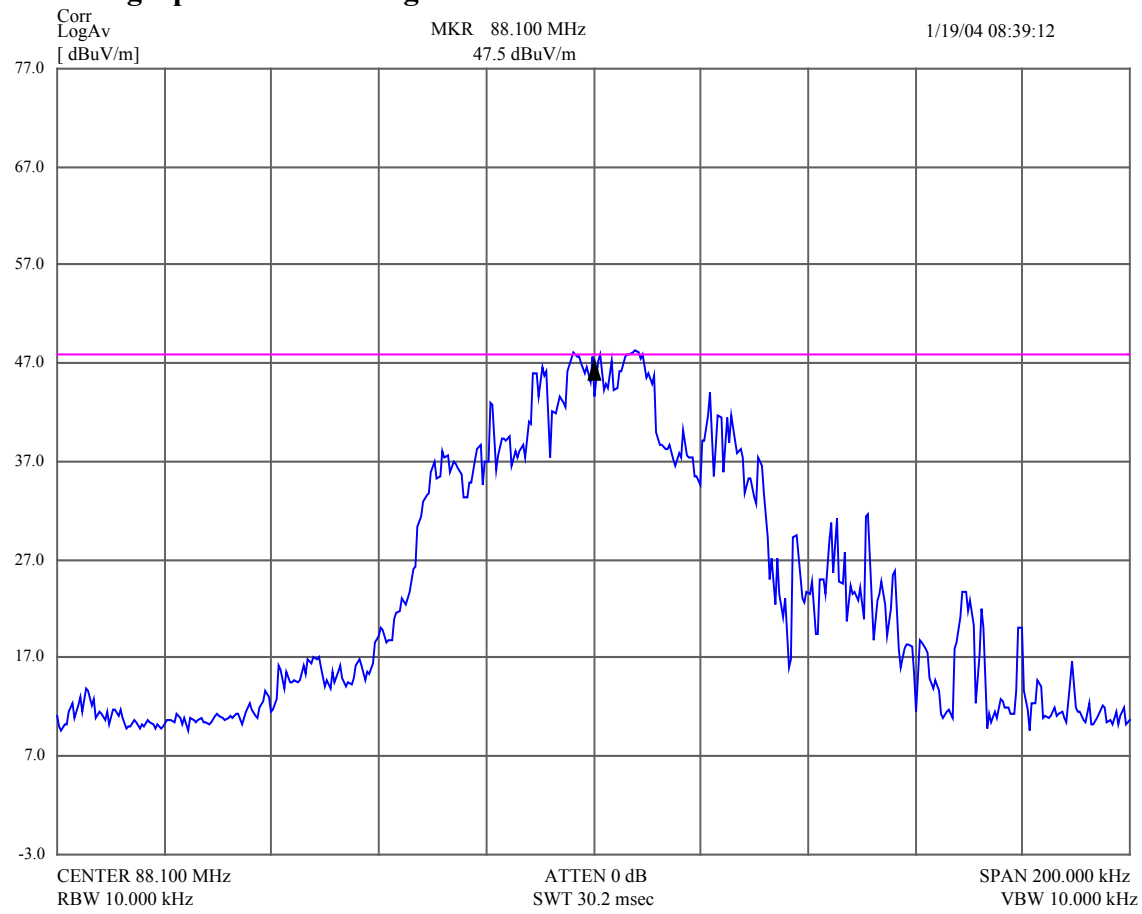


5.1.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.047504	16.32	48.00	-31.68	Horz	198	204	PASS
88.081000	42.82	48.00	-5.18	Horz	198	204	PASS
88.089000	45.91	48.00	-2.09	Horz	198	204	PASS
88.096000	47.41	48.00	-0.59	Horz	198	204	PASS
88.101504	47.84	48.00	-0.16	Horz	198	204	PASS
88.108496	48.02	48.00	0.02	Horz	198	204	FAIL
88.122000	43.94	48.00	-4.06	Horz	198	204	PASS
88.169504	23.57	48.00	-24.43	Horz	198	204	PASS
88.179504	20.09	48.00	-27.91	Horz	198	204	PASS

Receiver graph of Field Strength of Emissions at 3 m



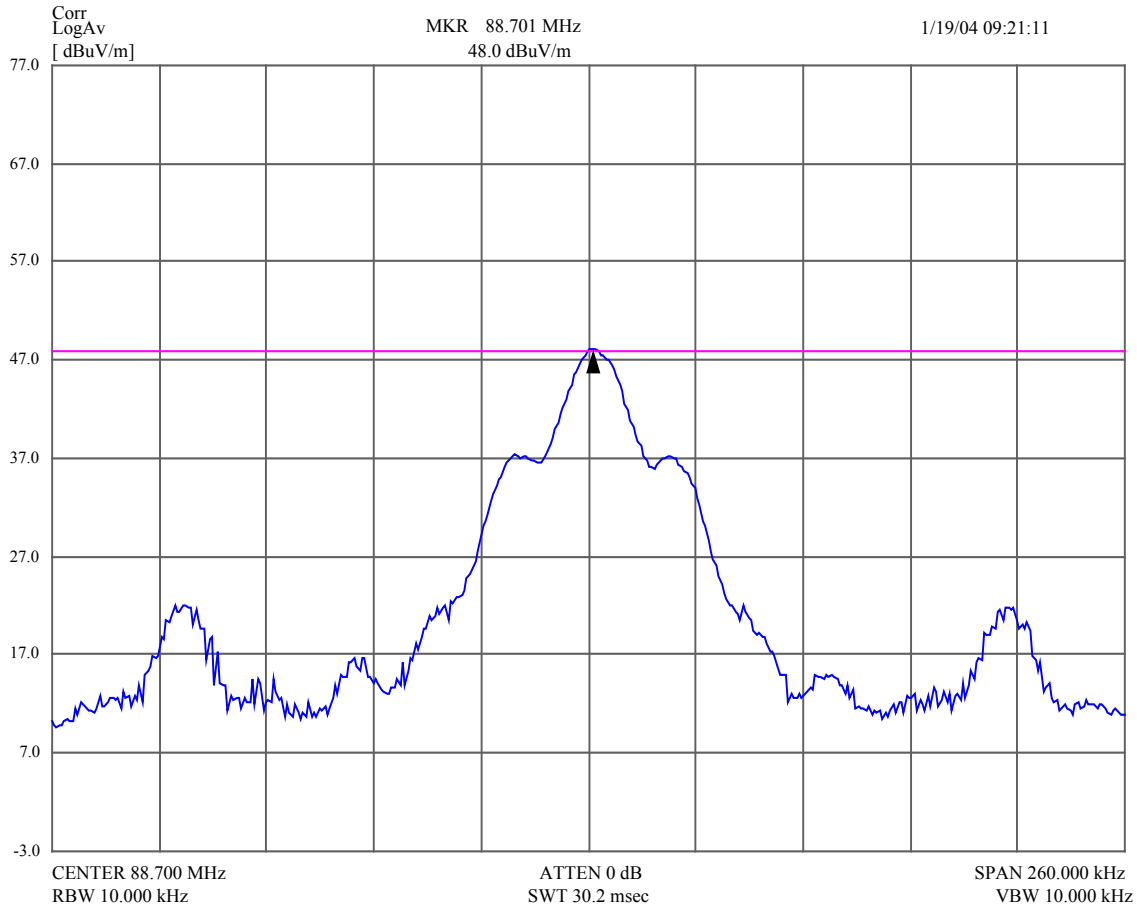
5.2. Channel 88.7 MHz

5.2.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.601848	21.91	48.00	-26.09	Horz	198	204	PASS
88.681800	37.19	48.00	-10.81	Horz	198	204	PASS
88.701296	47.97	48.00	-0.03	Horz	198	204	PASS
88.719504	37.00	48.00	-11.00	Horz	198	204	PASS
88.802048	21.78	48.00	-26.22	Horz	198	204	PASS

Receiver graph of Field Strength of Emission at 3 m

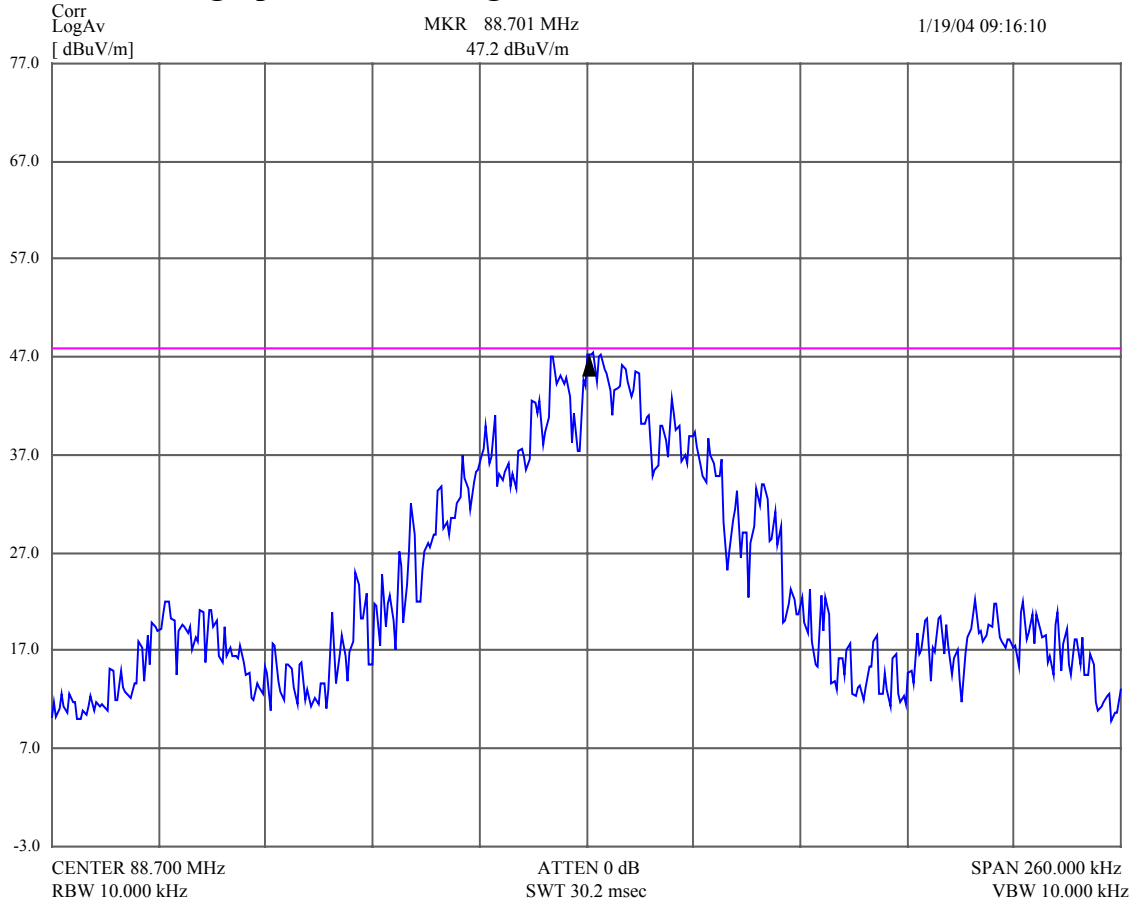


5.2.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
88.597952	21.93	48.00	-26.07	Horz	198	204	PASS
88.675952	39.95	48.00	-8.05	Horz	198	204	PASS
88.692200	46.92	48.00	-1.08	Horz	198	204	PASS
88.701952	47.29	48.00	-0.71	Horz	198	204	PASS
88.709104	46.13	48.00	-1.87	Horz	198	204	PASS
88.720800	42.76	48.00	-5.24	Horz	198	204	PASS
88.742896	34.00	48.00	-14.00	Horz	198	204	PASS
88.800096	21.73	48.00	-26.27	Horz	198	204	PASS

Receiver graph of Field Strength of Emissions at 3 m



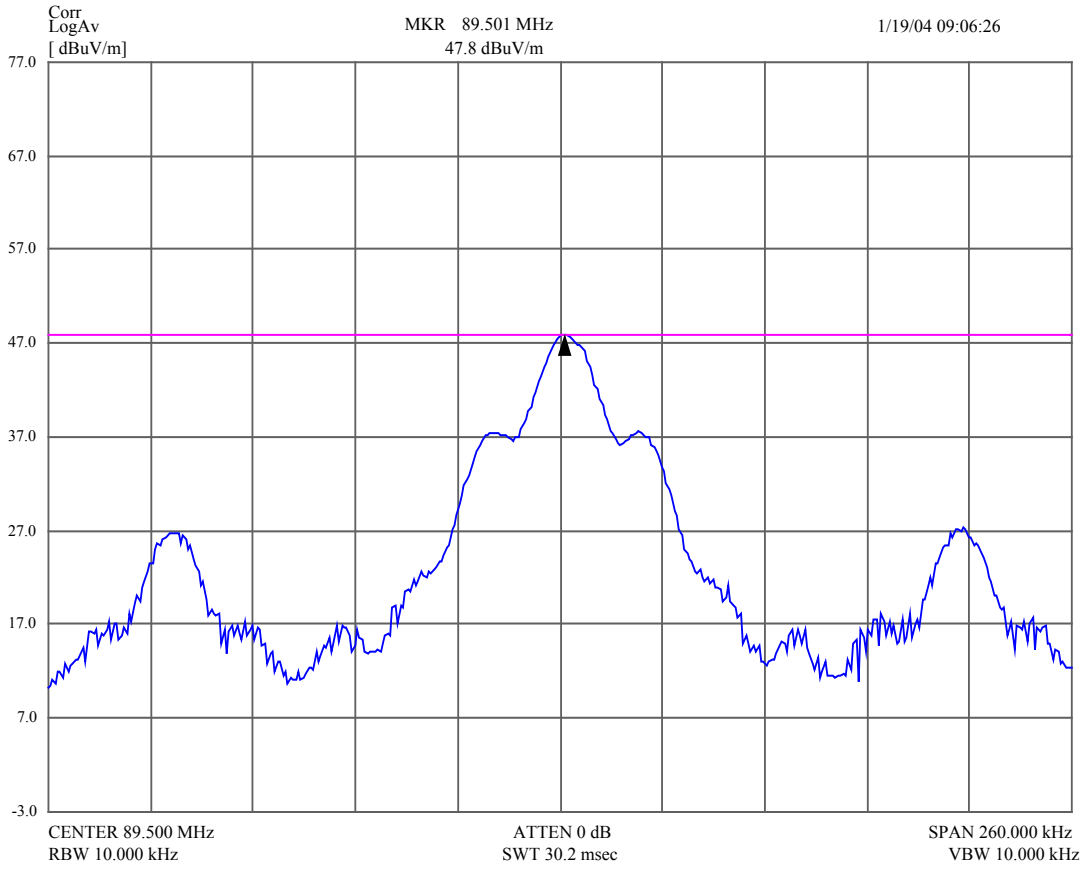
5.3. Channel 89.5 MHz

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
89.401200	26.58	48.00	-21.42	Horz	198	204	PASS
89.481800	37.16	48.00	-10.84	Horz	198	204	PASS
89.501296	47.81	48.00	-0.19	Horz	198	204	PASS
89.520152	37.44	48.00	-10.56	Horz	198	204	PASS
89.602048	26.77	48.00	-21.23	Horz	198	204	PASS

Receiver graph of Field Strength of Emissions at 3 m

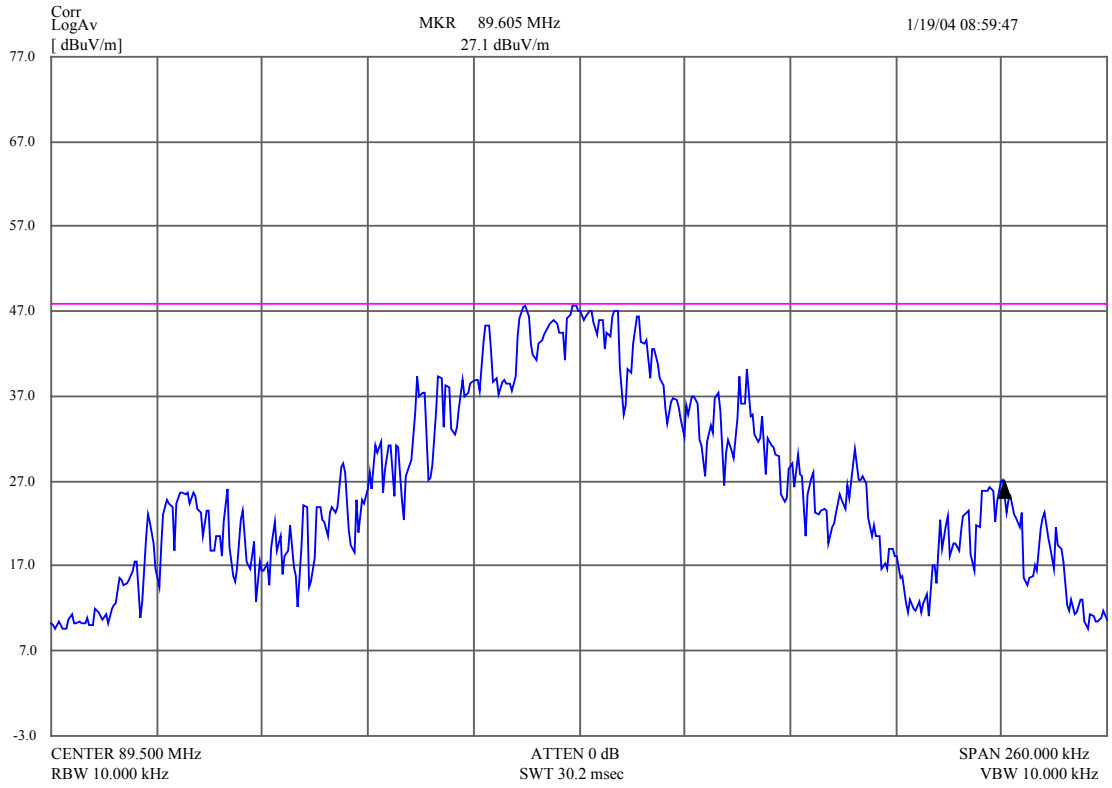


5.3.2 with modulation

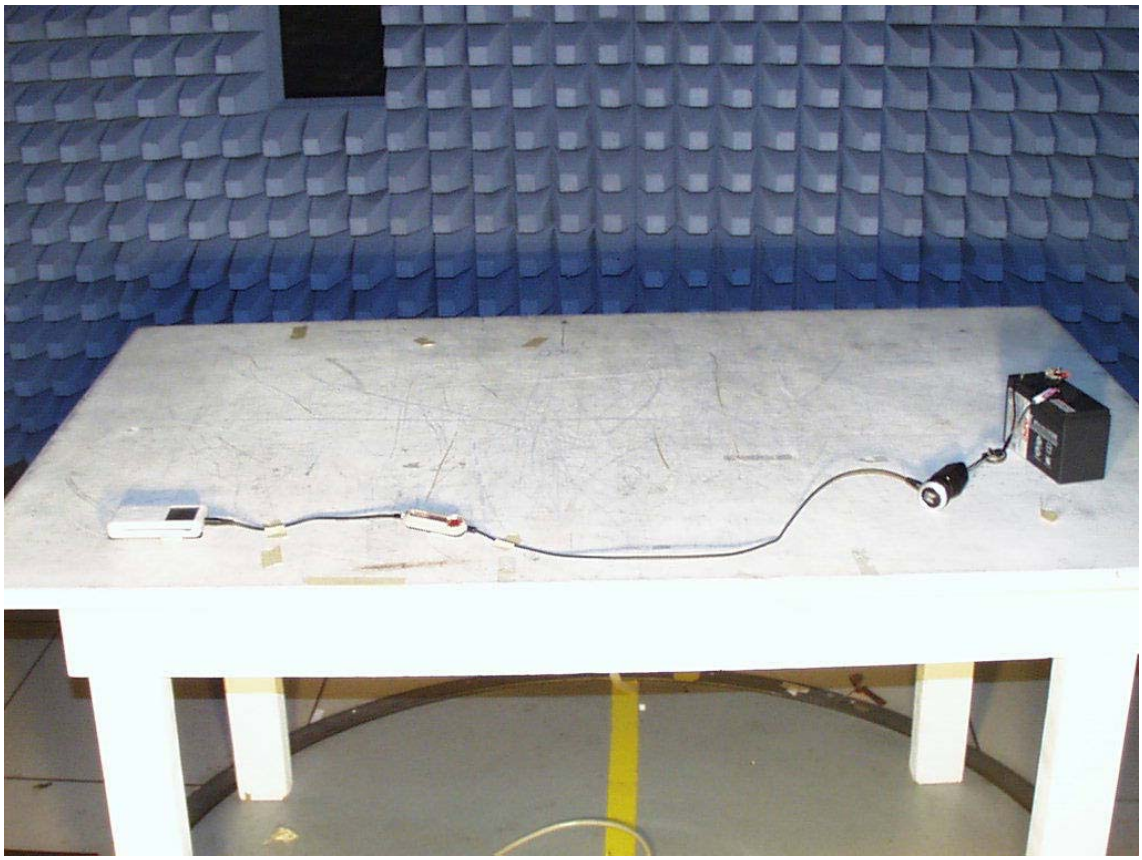
Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
89.402496	25.62	48.00	-22.38	Horz	198	204	PASS
89.460352	39.16	48.00	-8.84	Horz	198	204	PASS
89.465552	39.25	48.00	-8.75	Horz	198	204	PASS
89.477248	45.17	48.00	-2.83	Horz	198	204	PASS
89.486352	47.42	48.00	-0.58	Horz	198	204	PASS
89.498704	47.53	48.00	-0.47	Horz	198	204	PASS
89.505848	45.87	48.00	-2.13	Horz	198	204	PASS
89.514304	46.25	48.00	-1.75	Horz	198	204	PASS
89.541600	40.08	48.00	-7.92	Horz	198	204	PASS
89.568248	30.71	48.00	-17.29	Horz	198	204	PASS
89.604648	27.07	48.00	-20.93	Horz	198	204	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

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.

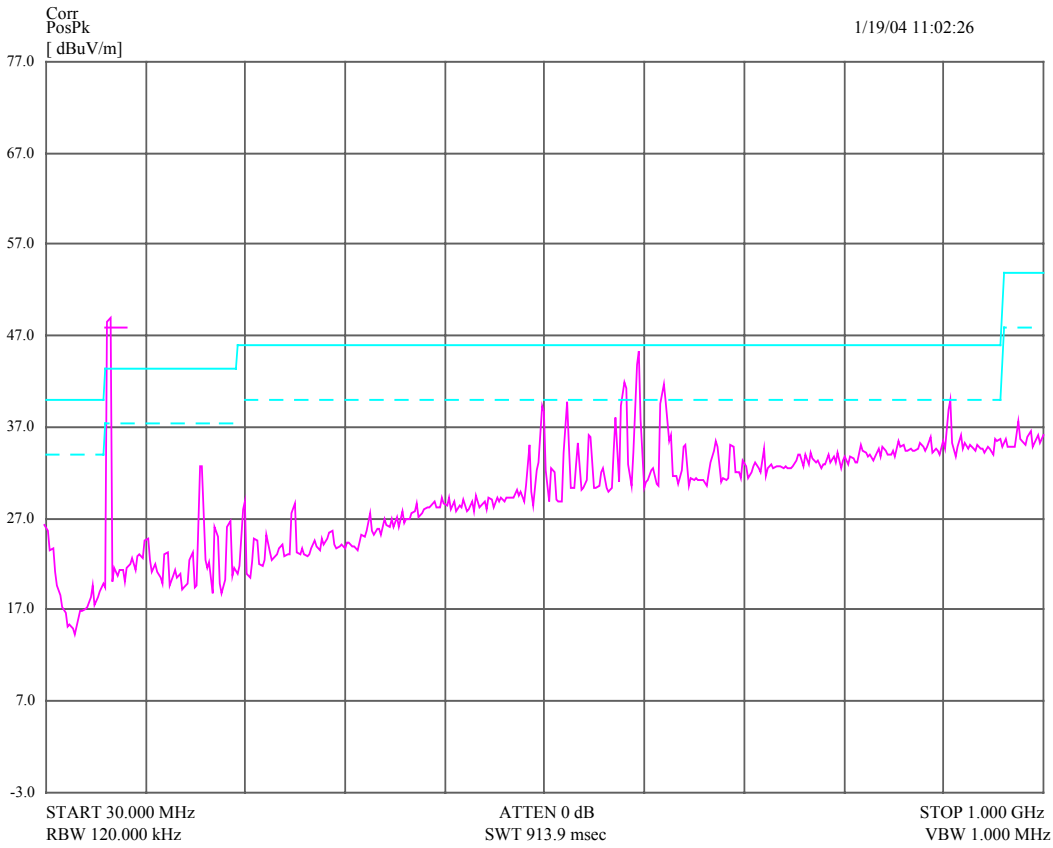
The EUT had been placed at the 0.8 m height on the non-conducting table. Transmitter had been turned on with modulation and worked at the frequencies of the selected channels.
All data was obtained via a HP 85876A EMI measurement software package using an HP 85462A Receiver which is compliant to CISPR 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, 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
176.203008	31.79	43.50	-11.71	Horz	146	186	PASS
264.288992	27.31	46.00	-18.69	Horz	110	186	PASS
528.022016	37.31	46.00	-8.69	Horz	225	186	PASS
591.222976	30.02	46.00	-15.98	Horz	208	182	PASS

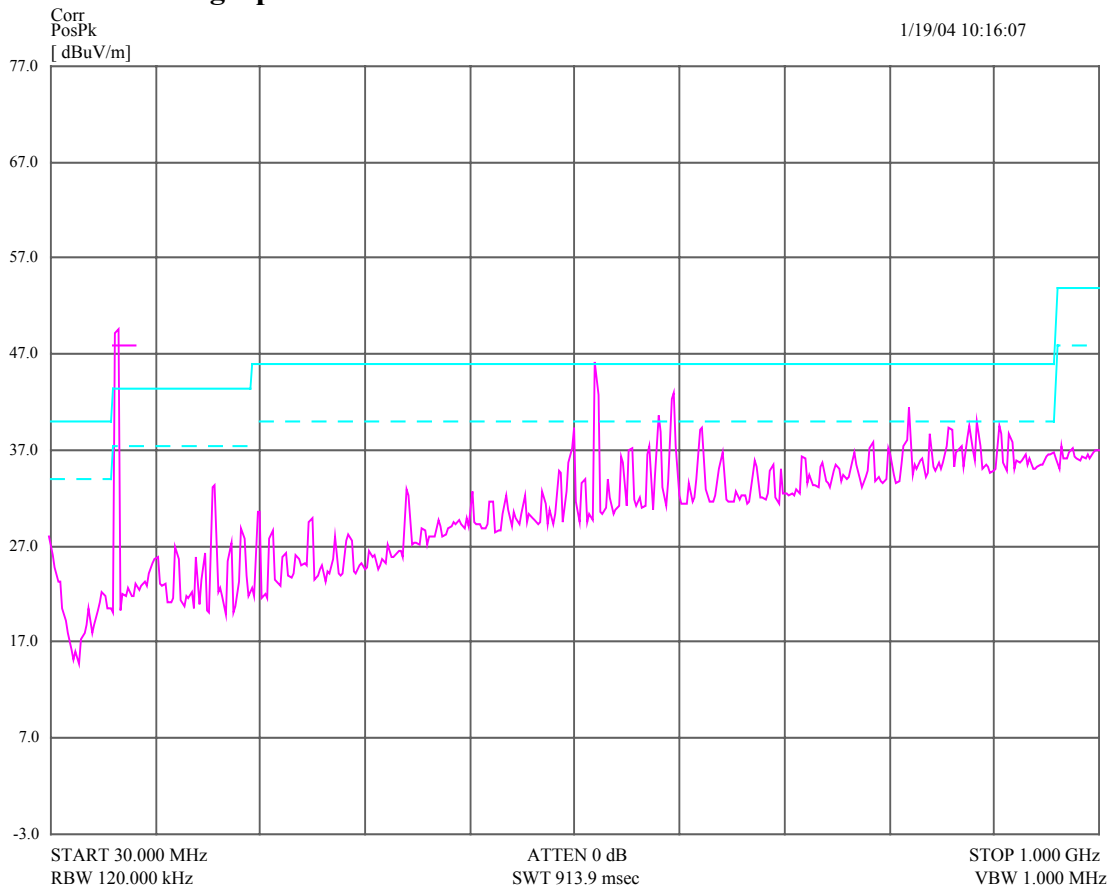
Receiver graph of Radiated Emissions at 3 m



6.2. Channel 88.7 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
177.399008	31.39	43.50	-12.11	Horz	153	177	PASS
266.083008	25.53	46.00	-20.47	Horz	186	171	PASS
527.996992	38.12	46.00	-7.88	Horz	186	177	PASS
591.251008	30.48	46.00	-15.52	Horz	186	171	PASS
623.990016	38.99	46.00	-7.01	Horz	188	180	PASS

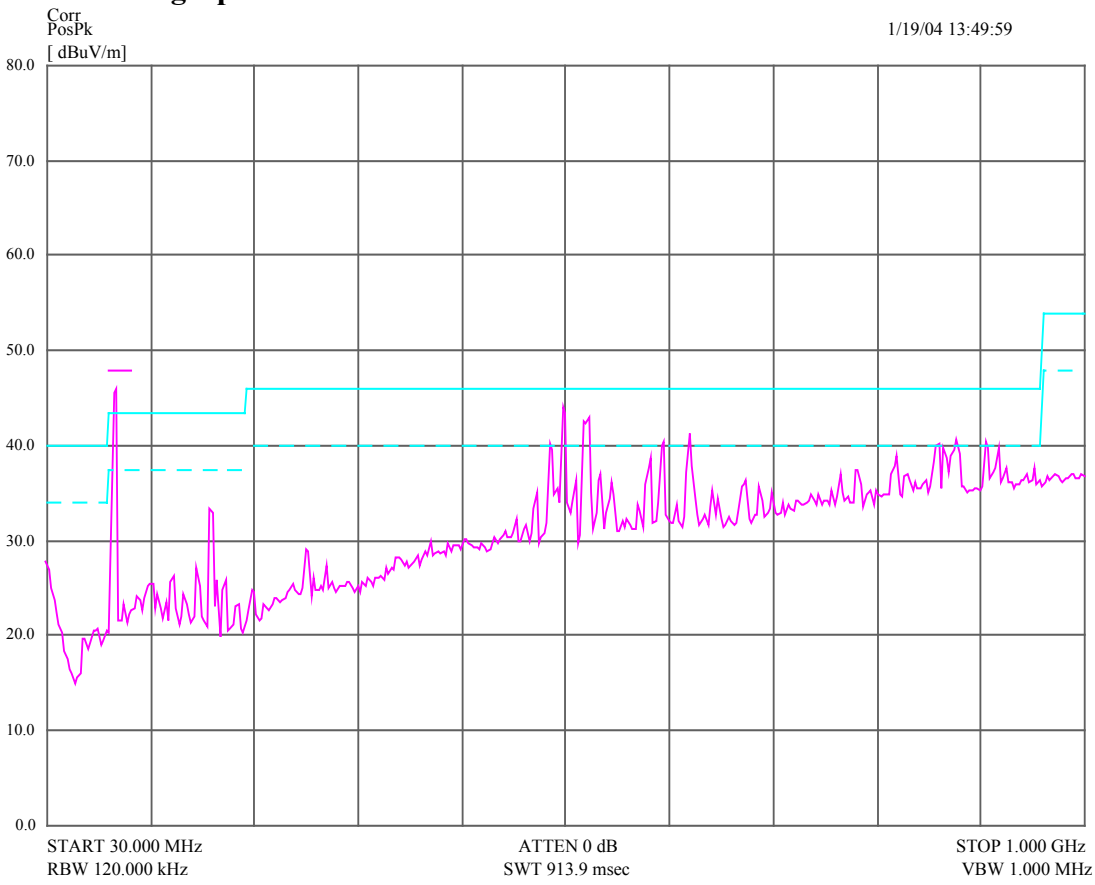
Receiver graph of Radiated Emissions at 3 m



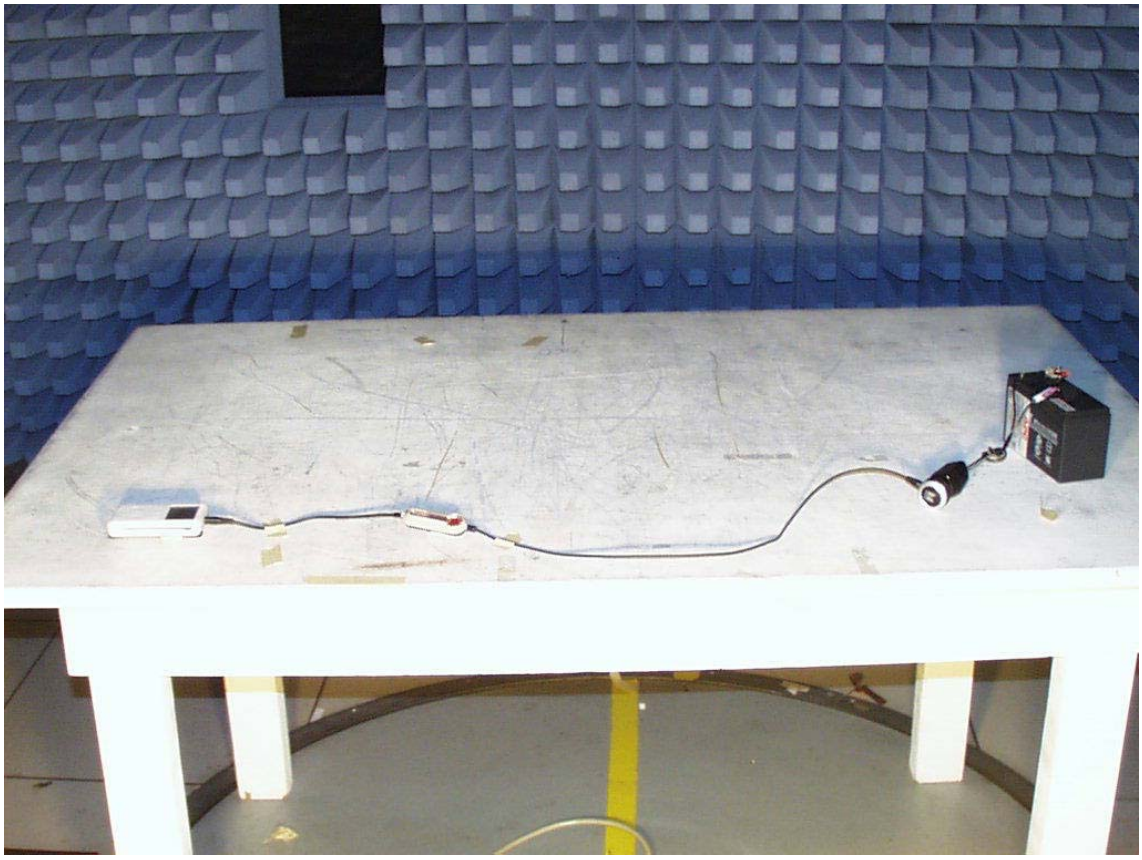
6.3. Channel 89.5 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
179.004992	30.75	43.50	-12.75	Horz	179	192	PASS
268.505984	27.50	46.00	-18.50	Horz	140	179	PASS
515.864992	30.04	46.00	-15.96	Horz	179	179	PASS
629.982016	33.49	46.00	-12.51	Horz	140	188	PASS

Receiver graph of Radiated Emissions at 3 m



6.4 Photographs of Test Set-Up



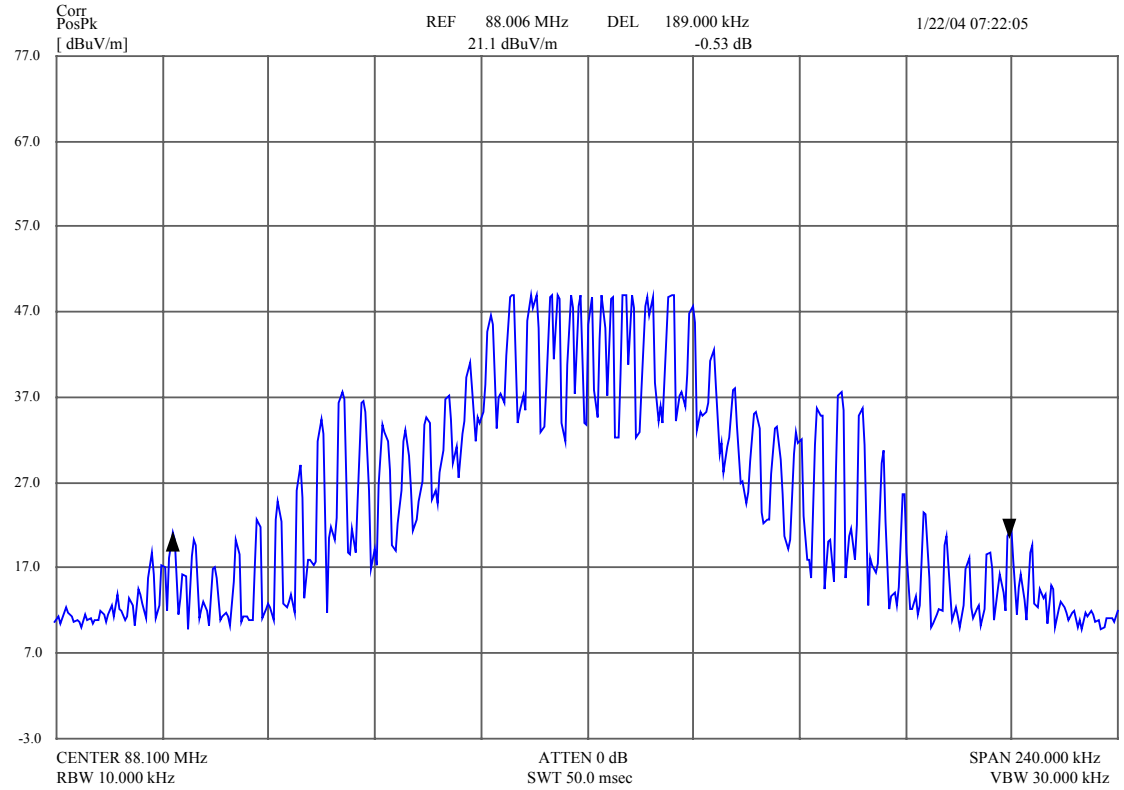
7.0 Occupied channel bandwidth

Test Requirements:	FCC Part 15 : Subclause 15.229
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.

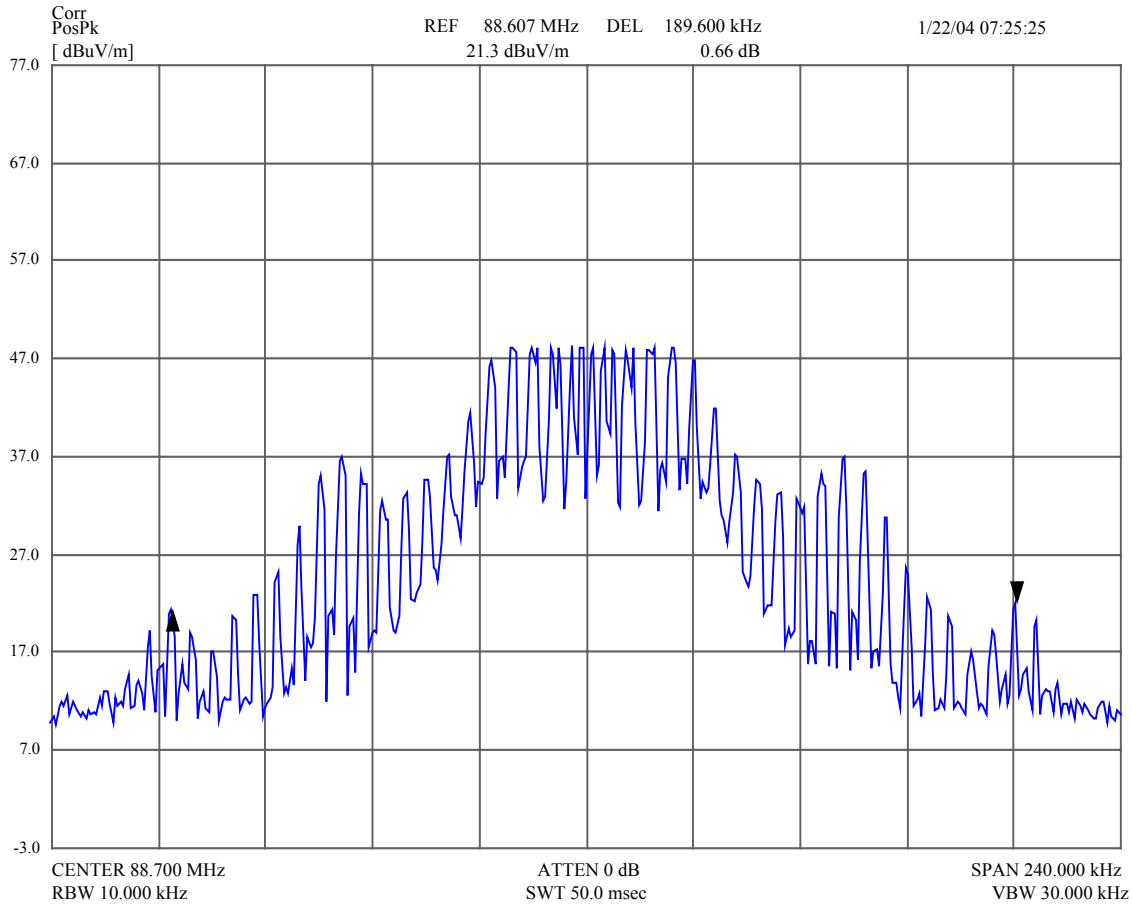
1. The Transmitter was adjusted to work at the selected channels –88.1 MHz, 88.7 MHz and 89.5 MHz. All measurements were conducted by the HP 85462A Spectrum Analyzer;
2. The test Signal generator HP651B was connected to the audio input of the EUT. The fundamental frequency is modulated by 1 kHz sinewave with input level equals to the limiting threshold Vin = 1.4 V p-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



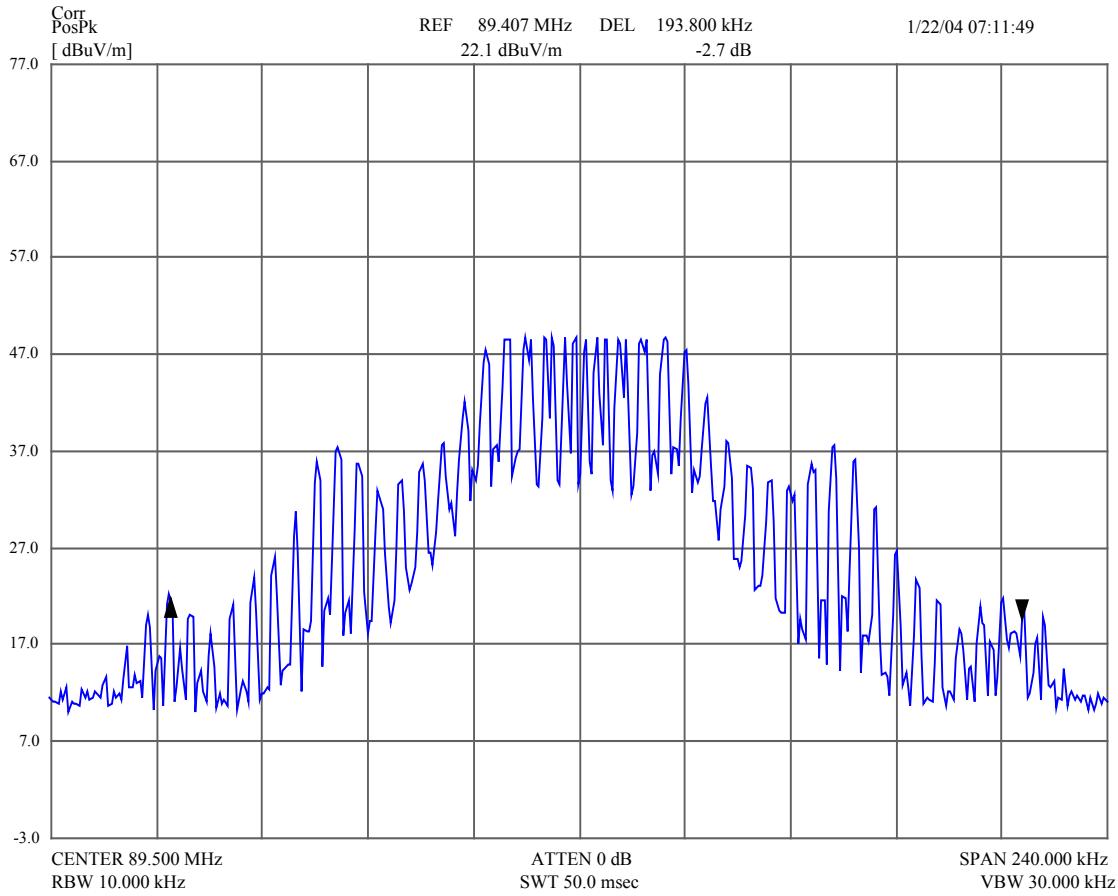
The plot shows the 26 dB bandwidth equals 189.0 kHz

7.2. Channel 88.7 MHz



The plot shows the 26 dB bandwidth equals 189.6 kHz

7.3. Channel 89.5 MHz



The plot shows the 26 dB bandwidth equals 193.8 kHz

7.4 Photographs of Test Set-Up