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FCC ID: RJE16800800
Client: Monster, LLC

024



NVLAP LAB CODE: 200413-0

July 8, 2004

Test Record

Product Verification
According to FCC Part 15 Subparts C

for

MONSTER, LLC
MODEL: 168008-00

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Revision History

Revision	Date	Description of Changes	Author
0.1	8 Jul. 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 by the FCC Part 15 Subpart C Rules and Regulations.

This EUT is designated:

**Universal FM Stereo Modulator,
vehicular use.**

Model :

168008-00

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:

Universal FM Stereo Modulator for vehicular use. MODEL : 168008-00 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:

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Report prepared by:

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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 Stereo Modulator for vehicular use
Model: 168008-00
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: 06/30/2004 – 07/02/2004
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 (6) available channels. Sliding 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.

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, 107.5, 107.7, 107.9 MHz.

Clock frequencies : 7.6 MHz

Power Supply : External 12VDC battery.

3.2 Test Run

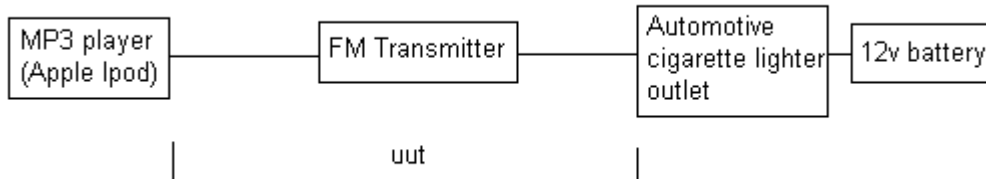
- 1) The EUT was connected through Monster Stubby cigarette lighter connector to the 12VDC battery
Apple Ipod, as a standard MP3 player, was connected to the appropriate input/output of the EUT;
- 2) Test Oscillator HP 651B had been connected to the Aux In input of the docking connector when it was necessary.

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

88.1 MHz 107.5 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	Apple Ipod
2	MP3 player	M8976LL/A		
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

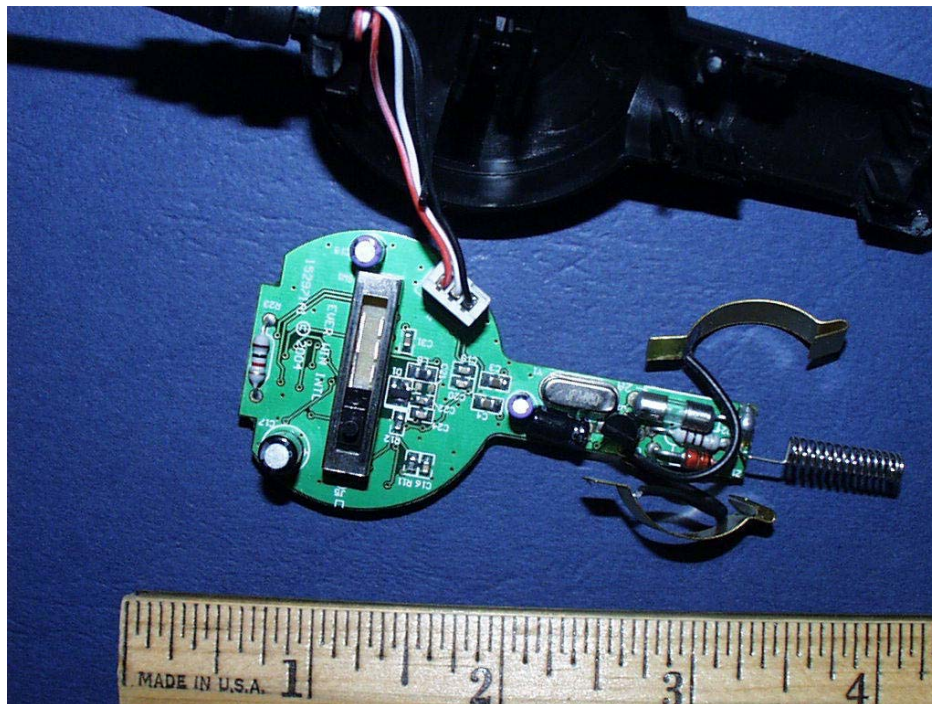
Photos of the EUT



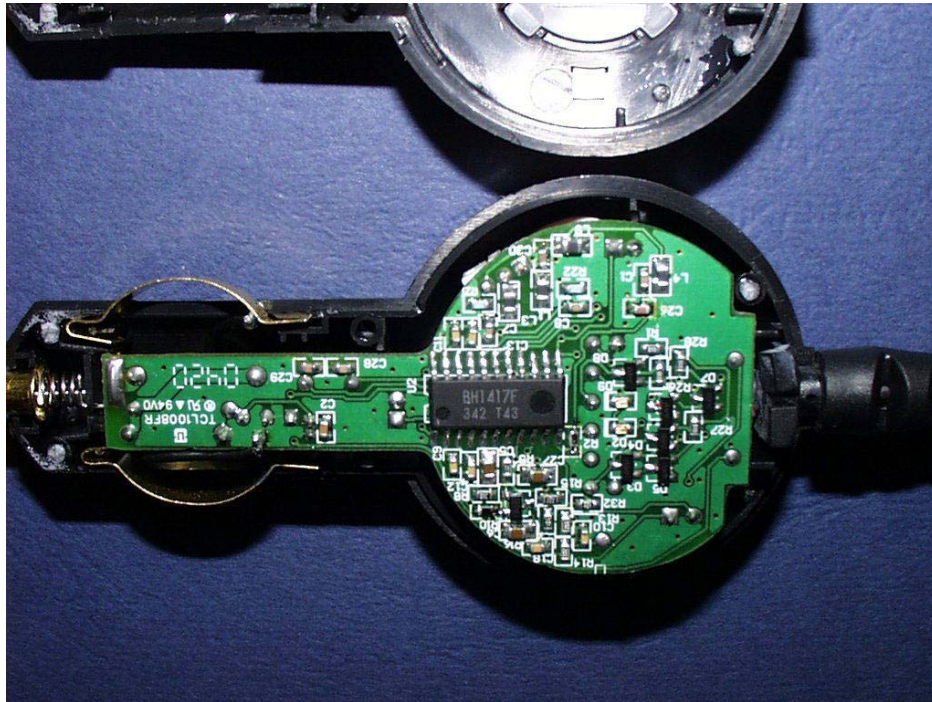
**EUT: Universal FM Stereo Modulator for vehicular use.
MODEL : 168008-00**



EUT: Universal FM Stereo Modulator for vehicular use.
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EUT: Universal FM Stereo Modulator for vehicular use.
MODEL : 168008-00
PCB components side



EUT: Universal FM Stereo Modulator for vehicular use.
MODEL : 168008-00
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, 107.5 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:

$$FS=SA+AF+CL-AG$$

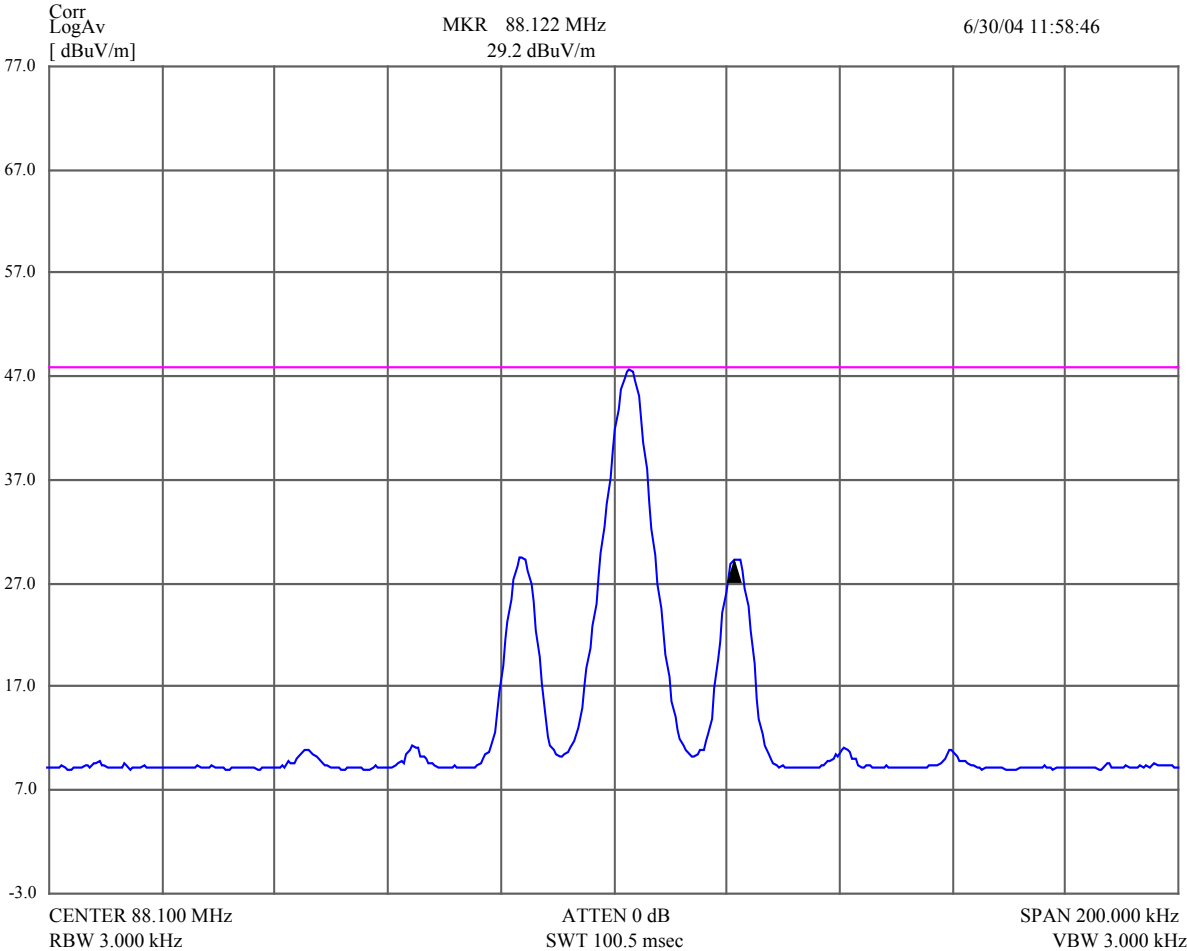
Where: FS= field strength in dB (uV/m)
SA= receiver amplitude in dB (uV)
CL= cable attenuation in (dB)
AF= antenna factor in (dB)
AG= amplifier gain

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
=====							
=							
88.084000	29.37	48.00	-18.63	Horz	217	8	PASS
88.103000	47.51	48.00	-0.49	Horz	217	8	PASS
88.121504	29.22	48.00	-18.78	Horz	217	8	PASS

Receiver graph of Field Strength of Emissions at 3 m

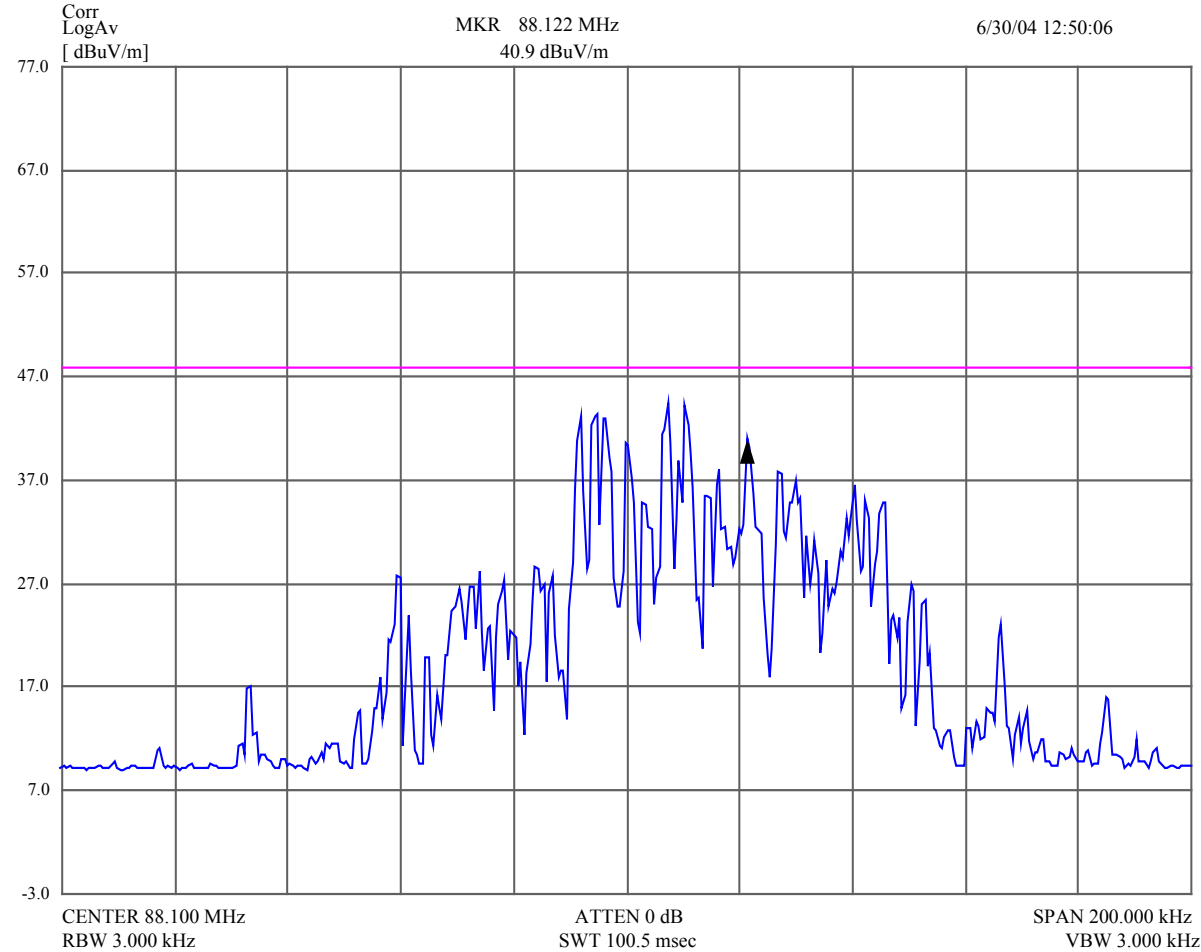


5.1.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
=====							
=							
88.092000	43.00	48.00	-5.00	Horz	191	8	PASS
88.096000	42.83	48.00	-5.17	Horz	191	8	PASS
88.107504	44.37	48.00	-3.63	Horz	191	8	PASS
88.121504	40.94	48.00	-7.06	Horz	191	8	PASS

Receiver graph of Field Strength of Emissions at 3 m

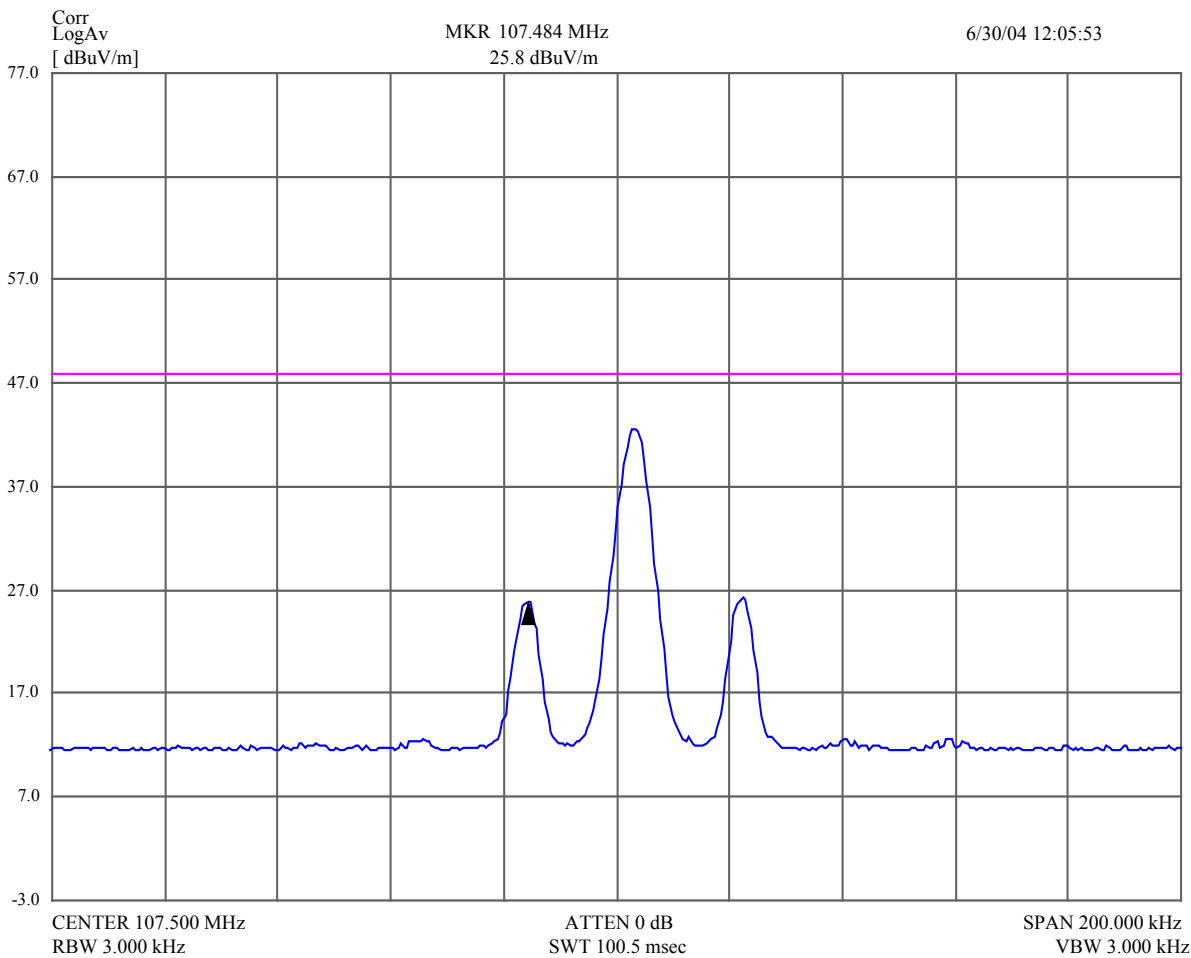


5.2. Channel 107.5 MHz
5.2.1 no modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
=====							
=							
107.484496	25.82	48.00	-22.18	Horz	291	8	PASS
107.503504	42.49	48.00	-5.51	Horz	291	8	PASS
107.522496	26.11	48.00	-21.89	Horz	291	8	PASS

Receiver graph of Field Strength of Emission at 3 m

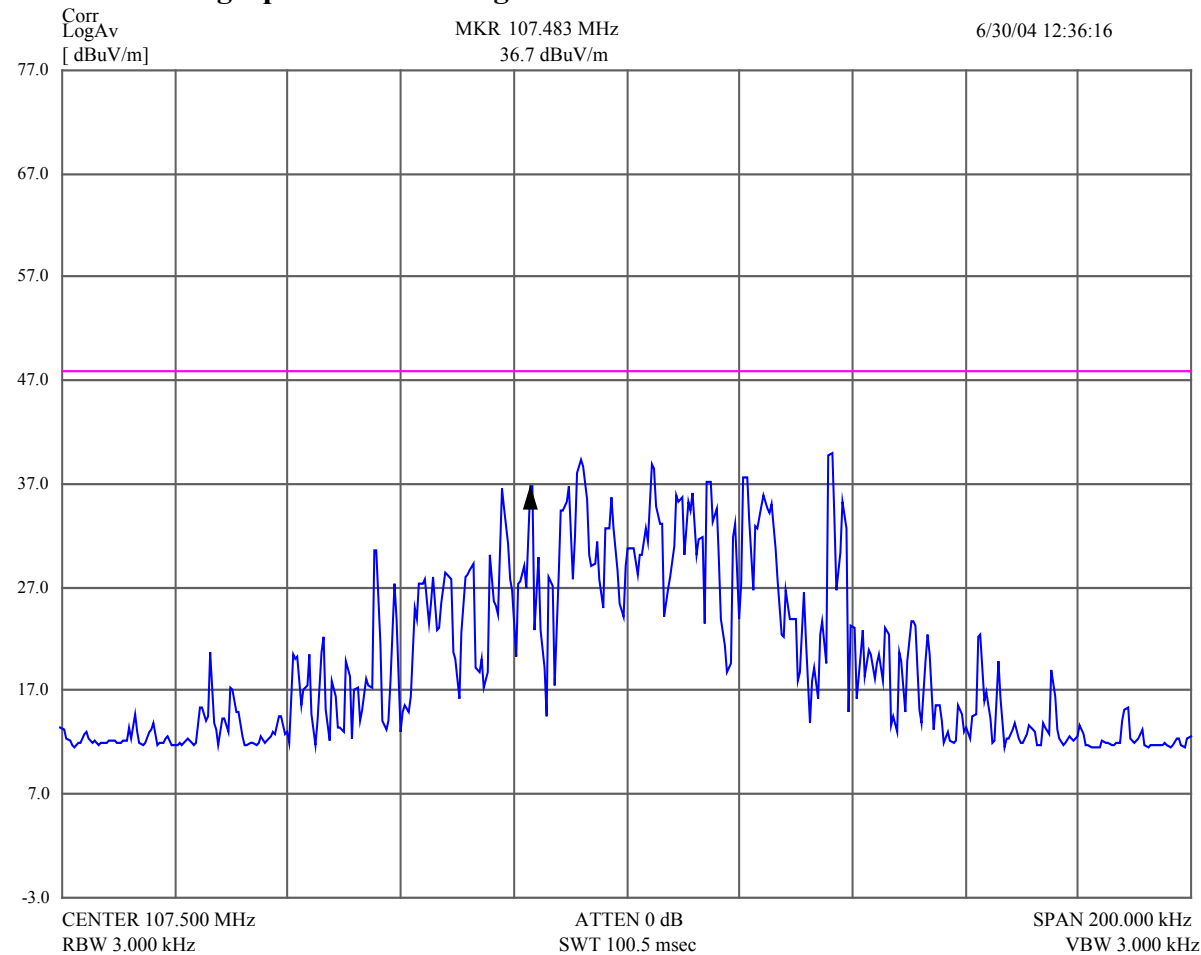


5.2.2 with modulation

Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
=====							
=							
107.483000	36.74	48.00	-11.26	Horz	287	8	PASS
107.492000	39.15	48.00	-8.85	Horz	287	8	PASS
107.504496	38.79	48.00	-9.21	Horz	287	8	PASS
107.514496	37.08	48.00	-10.92	Horz	287	8	PASS
107.521504	37.59	48.00	-10.41	Horz	287	8	PASS
107.536496	39.79	48.00	-8.21	Horz	287	8	PASS

Receiver graph of Field Strength of Emissions at 3 m



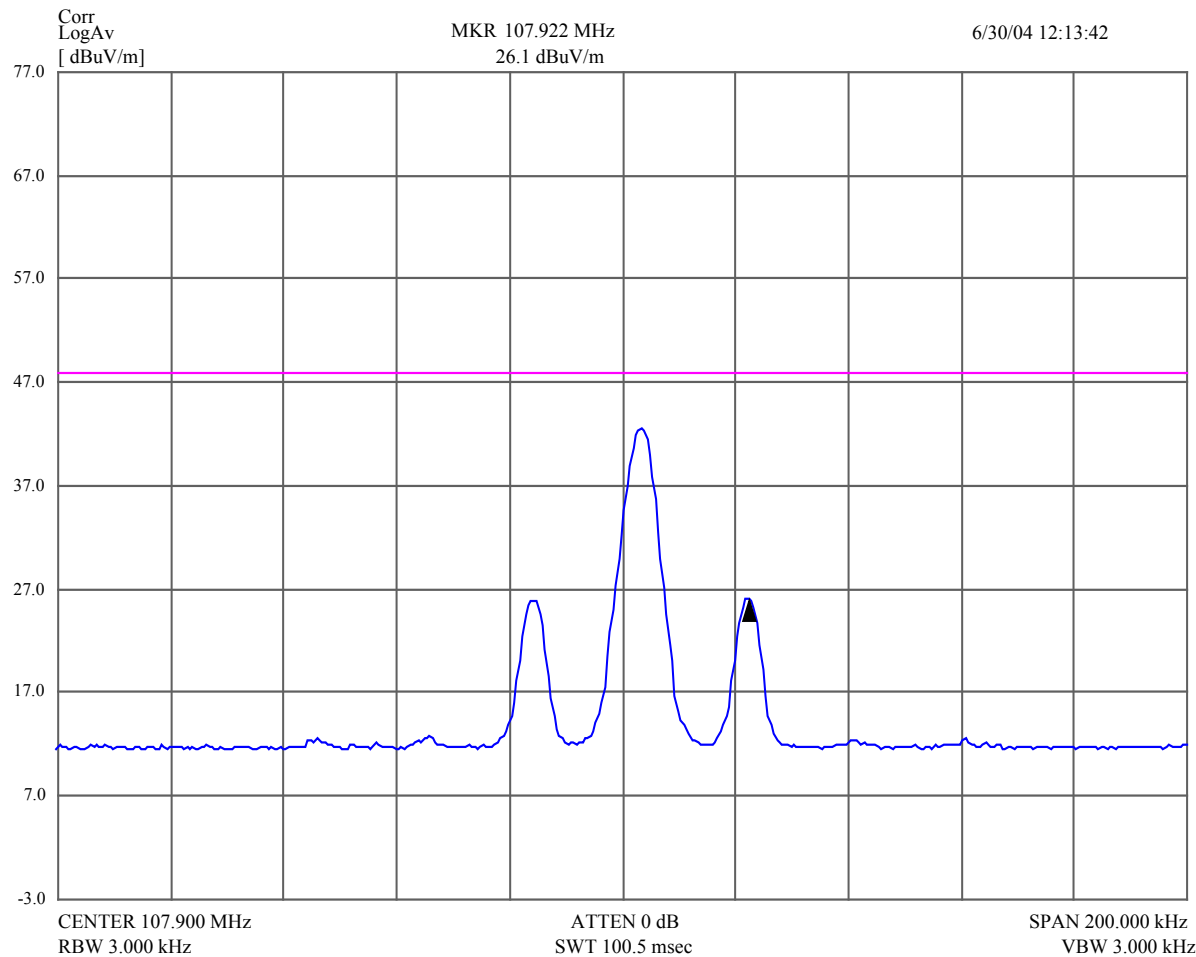
5.3. Channel 107.9 MHz

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
107.884496	25.87	48.00	-22.13	Horz	287	8	PASS
107.903504	42.43	48.00	-5.57	Horz	287	8	PASS
107.922496	26.07	48.00	-21.93	Horz	287	8	PASS

Receiver graph of Field Strength of Emissions at 3 m

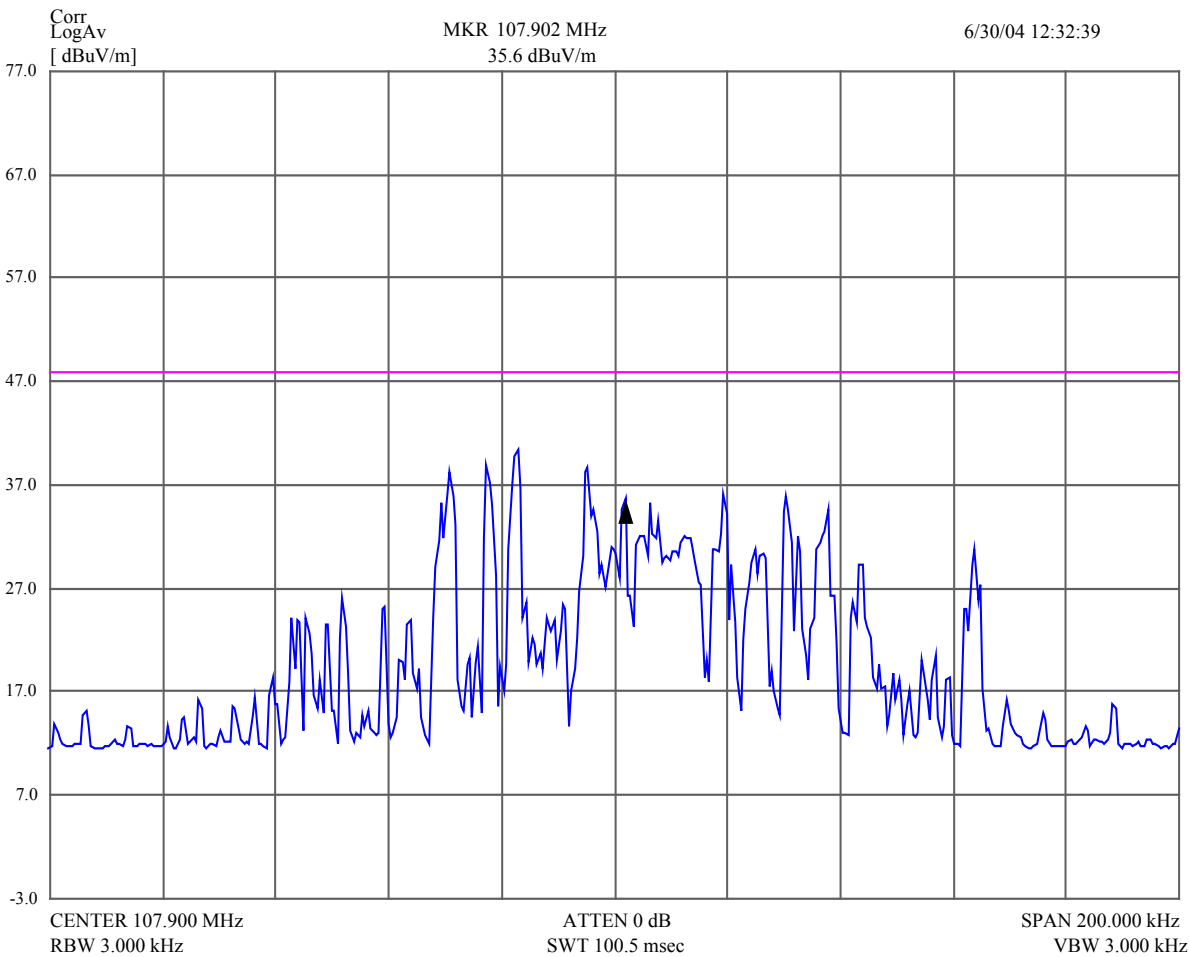


5.3.2 with modulation

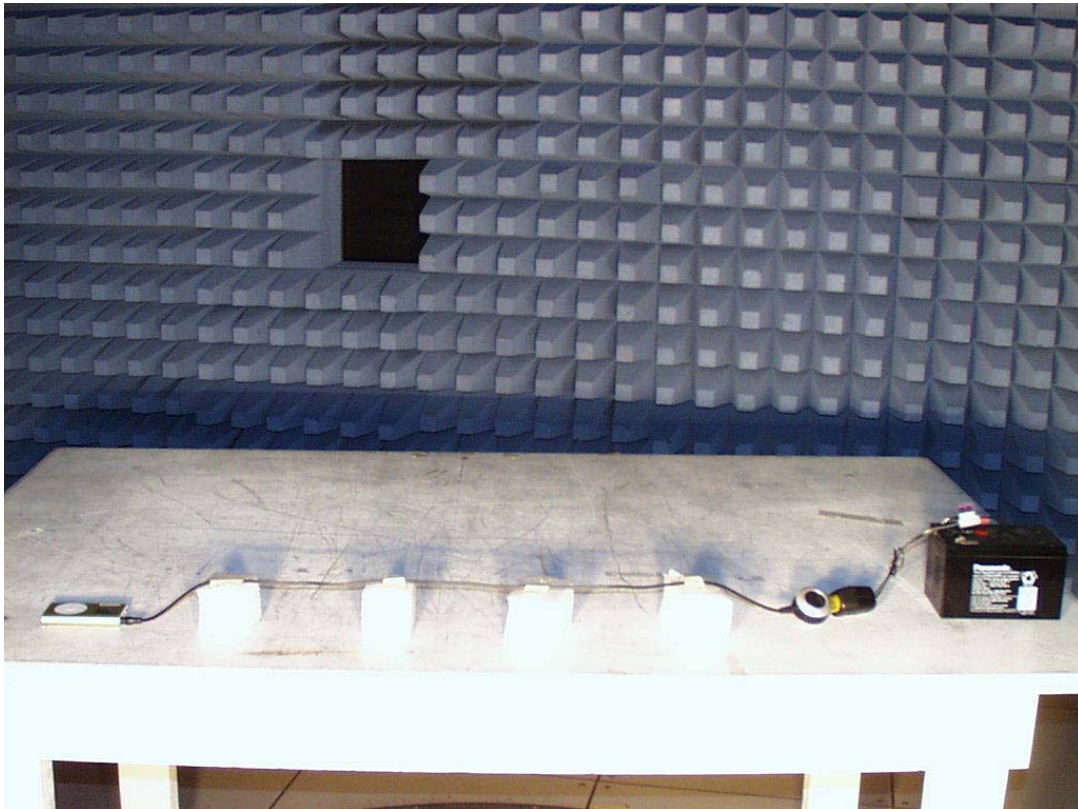
Average value data

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Pol	Hgt cm	Angle deg	Status
=====							
=							
107.871000	38.20	48.00	-9.80	Horz	287	8	PASS
107.877504	38.84	48.00	-9.16	Horz	287	8	PASS
107.883000	40.31	48.00	-7.69	Horz	287	8	PASS
107.895504	38.71	48.00	-9.29	Horz	287	8	PASS
107.902000	35.60	48.00	-12.40	Horz	287	8	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, 107.5 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:

$$FS=SA+AF+CL-AG$$

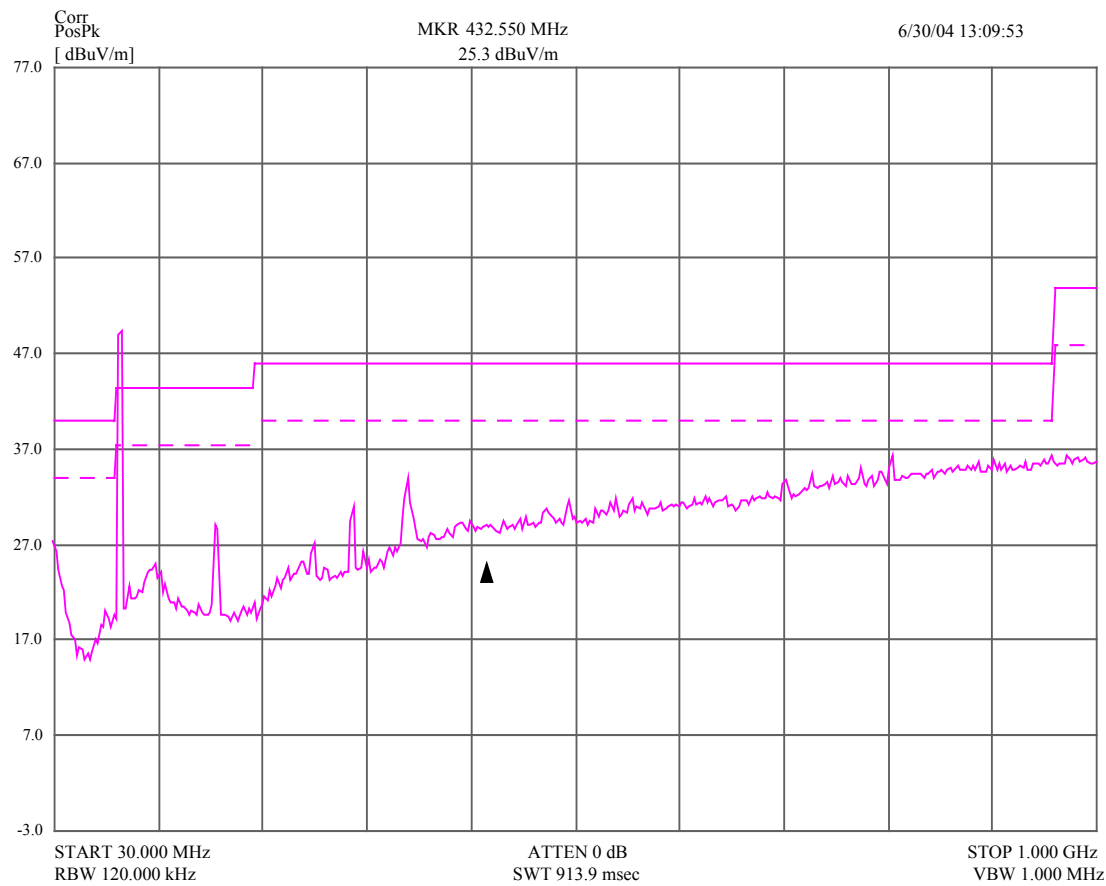
Where: **FS= field strength in dB (uV/m)**
 SA= receiver amplitude in dB (uV)
 CL= cable attenuation in (dB)
 AF= antenna factor in (dB)
 AG= amplifier gain

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

6.1. Channel 88.1 MHz

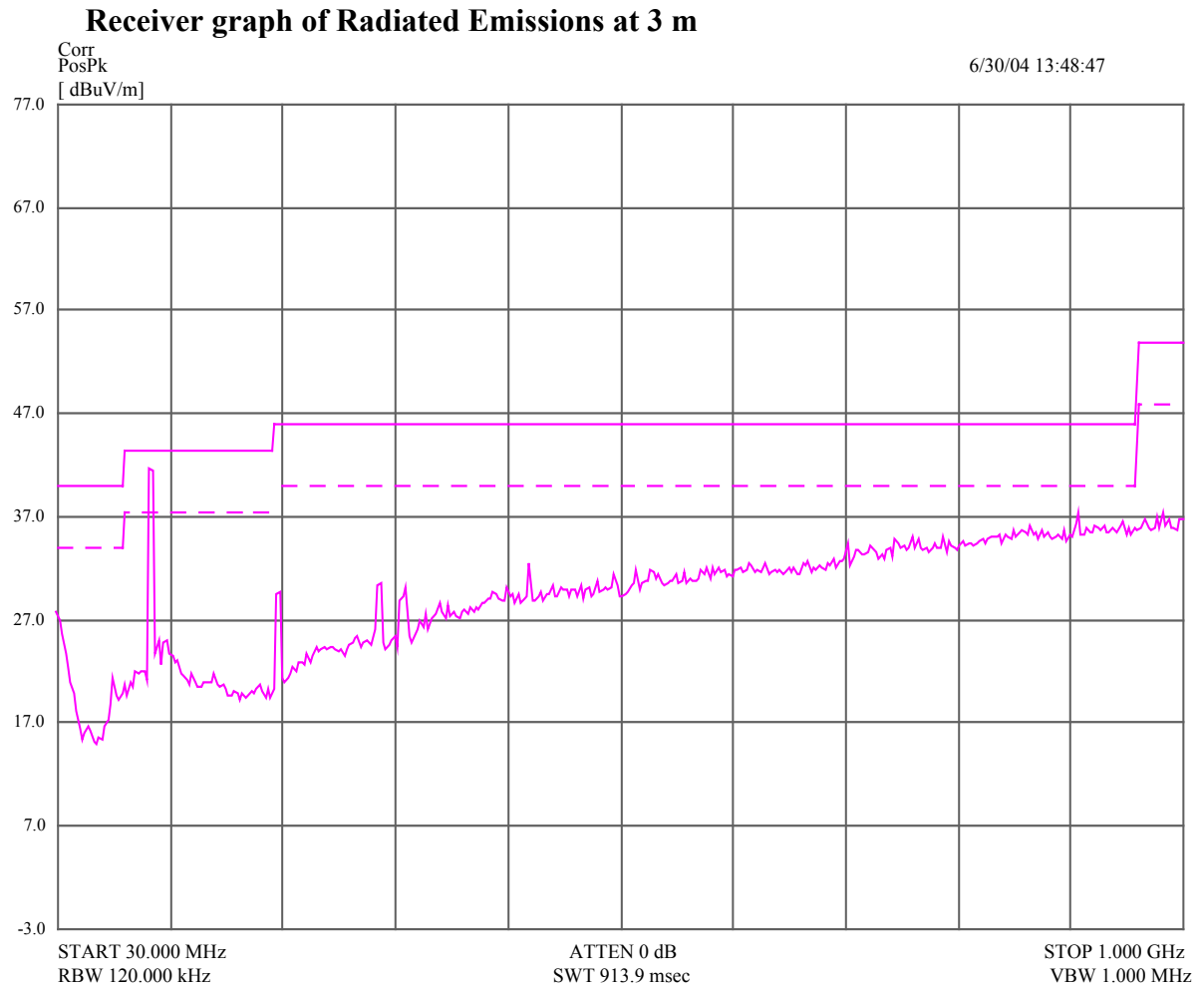
Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
176.227504	27.42	43.50	-16.08	Horz	232	43	PASS
300.693760	22.69	46.00	-23.31	Horz	97	342	PASS
352.672000	29.57	46.00	-16.43	Horz	97	245	PASS
801.861760	29.40	46.00	-16.60	Horz	244	129	PASS

Receiver graph of Radiated Emissions at 3 m



6.2. Channel 107.5 MHz

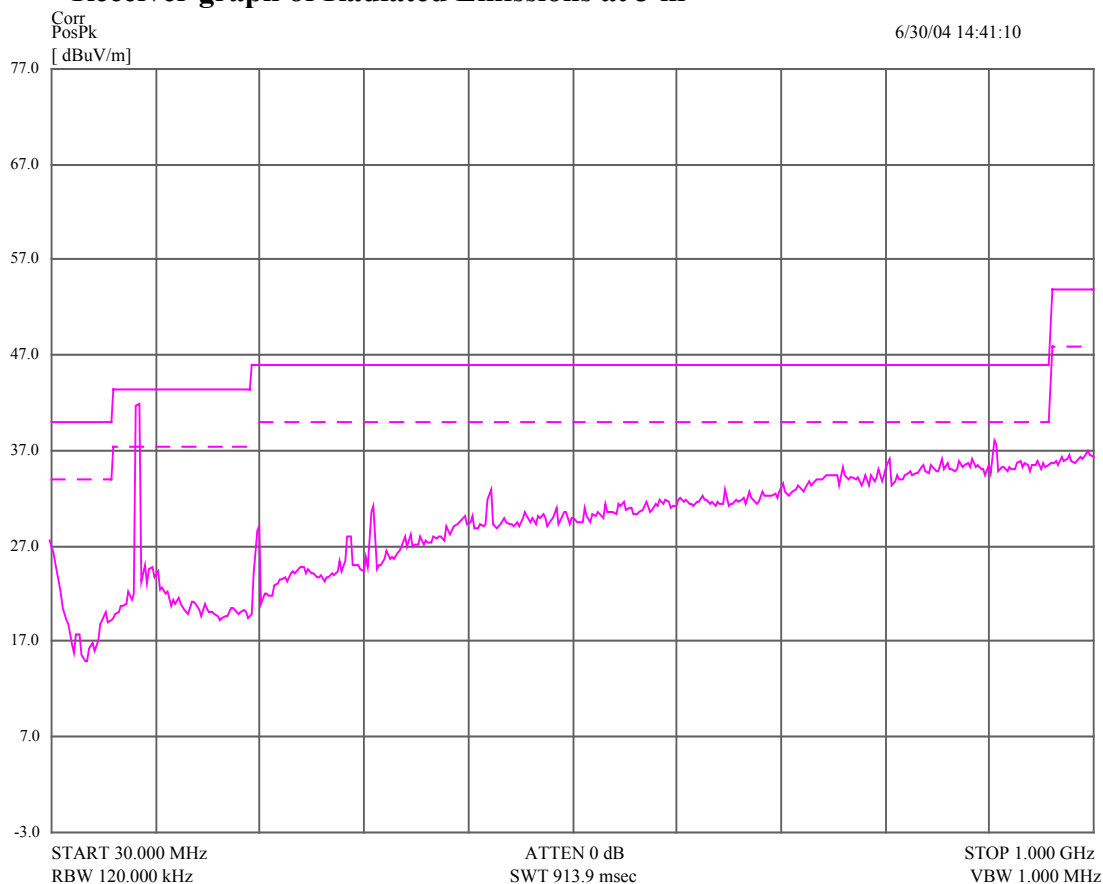
Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
214.840256	27.99	43.50	-15.51	Horz	154	38	PASS
300.690496	25.63	46.00	-20.37	Horz	281	70	PASS
322.733760	25.63	46.00	-20.37	Horz	97	238	PASS
430.028736	27.62	46.00	-18.38	Horz	97	258	PASS



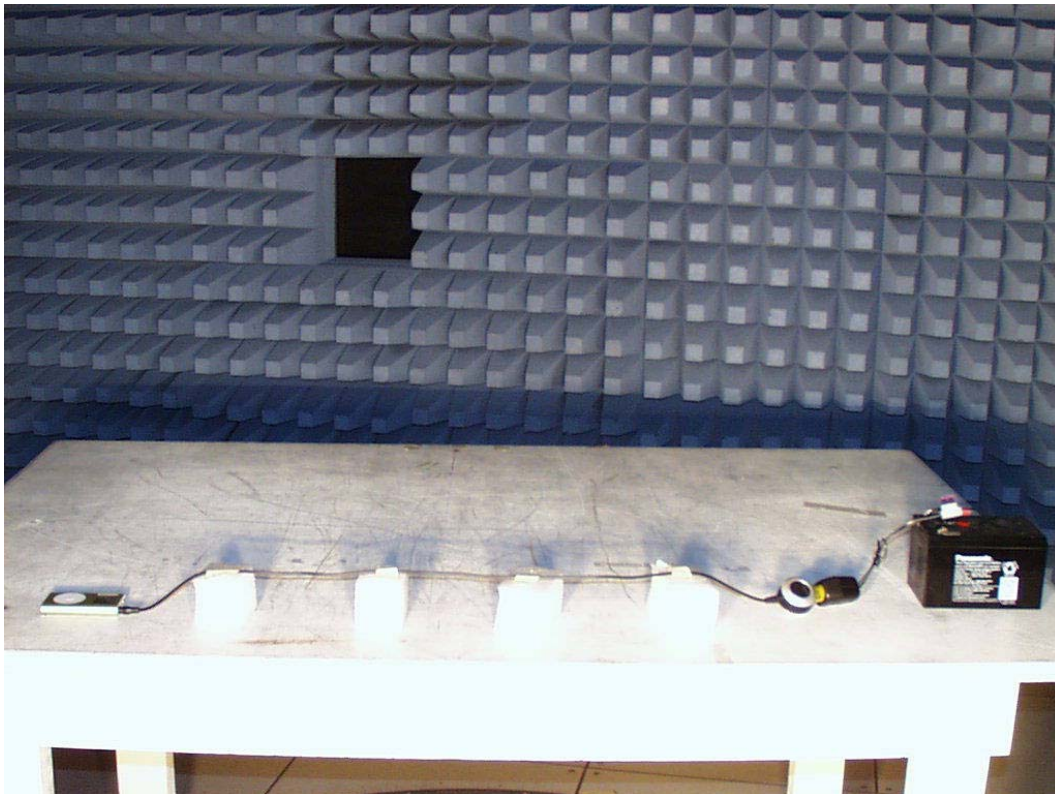
6.3. Channel 107.9 MHz

Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
215.806256	28.43	43.50	-15.07	Horz	155	43	PASS
300.684992	24.36	46.00	-21.64	Horz	251	178	PASS
323.708736	28.31	46.00	-17.69	Horz	97	325	PASS
431.612512	28.51	46.00	-17.49	Horz	97	136	PASS
902.040000	27.59	46.00	-18.41	Horz	282	40	PASS

Receiver graph of Radiated Emissions at 3 m



6.4 Photographs of Test Set-Up



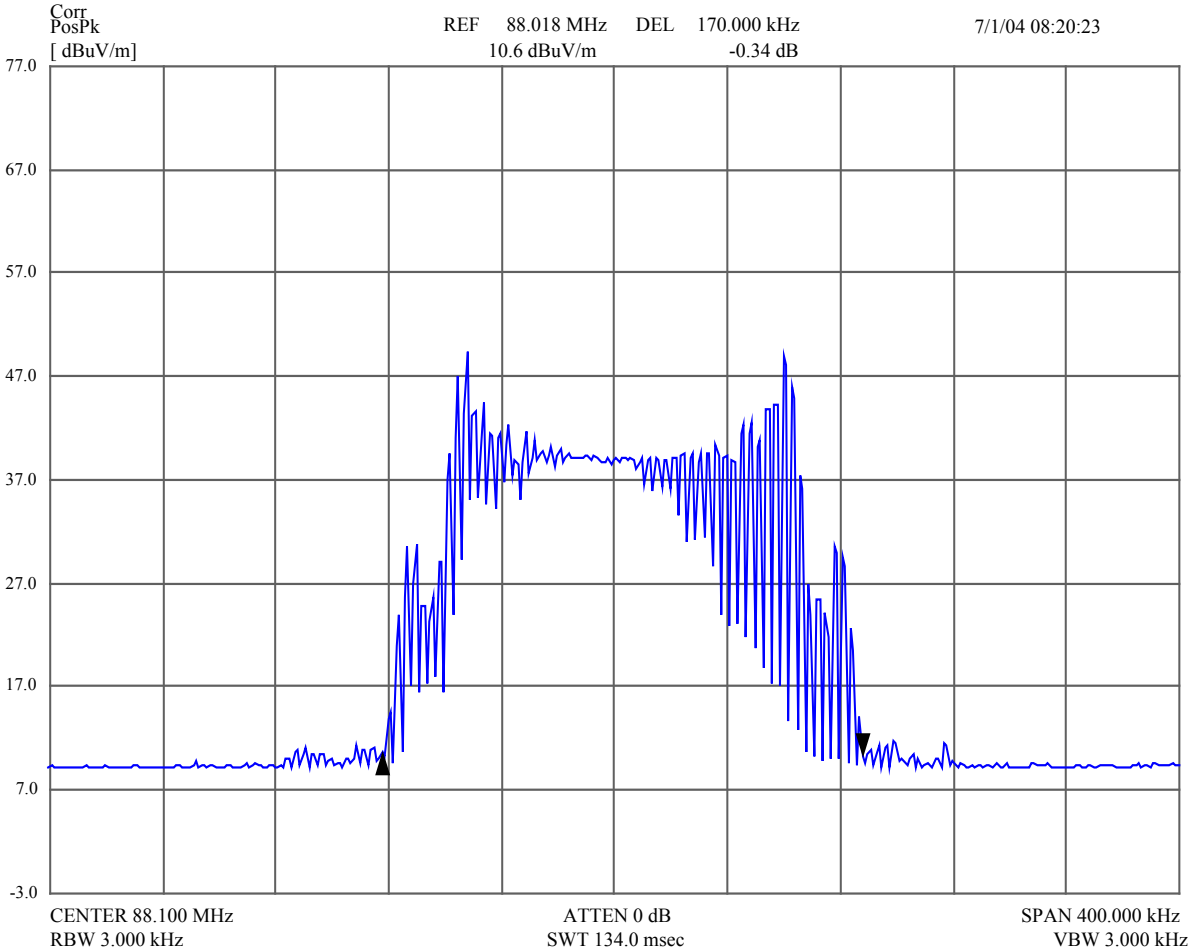
7.0 Occupied channel bandwidth

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.

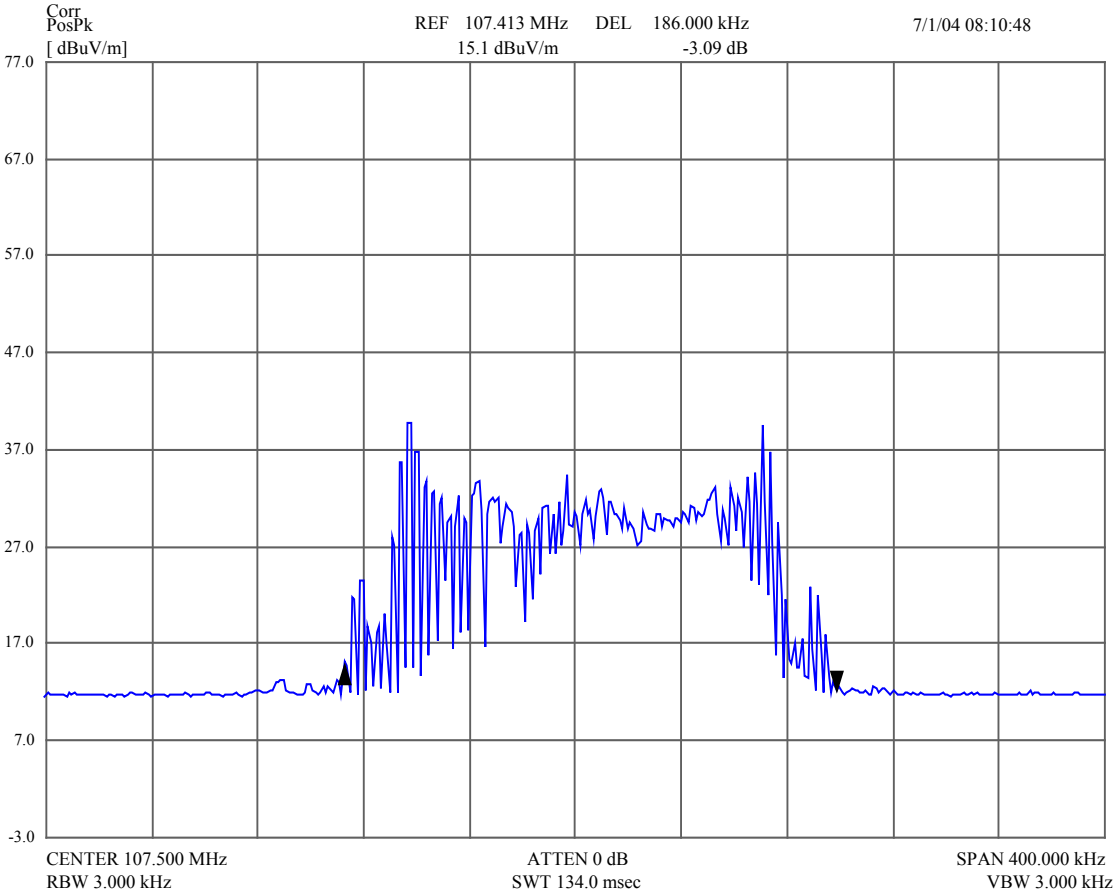
1. The Transmitter was adjusted to work at the selected channels –88.1 MHz, 107.5 MHz and 107.9 MHz. All measurements were conducted by the HP 85462A Spectrum Analyzer;
2. The test Signal generator HP651B was connected to the audio input of the EUT. The fundamental frequency is modulated by 1 kHz sinewave with input level equals to the limiting threshold
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



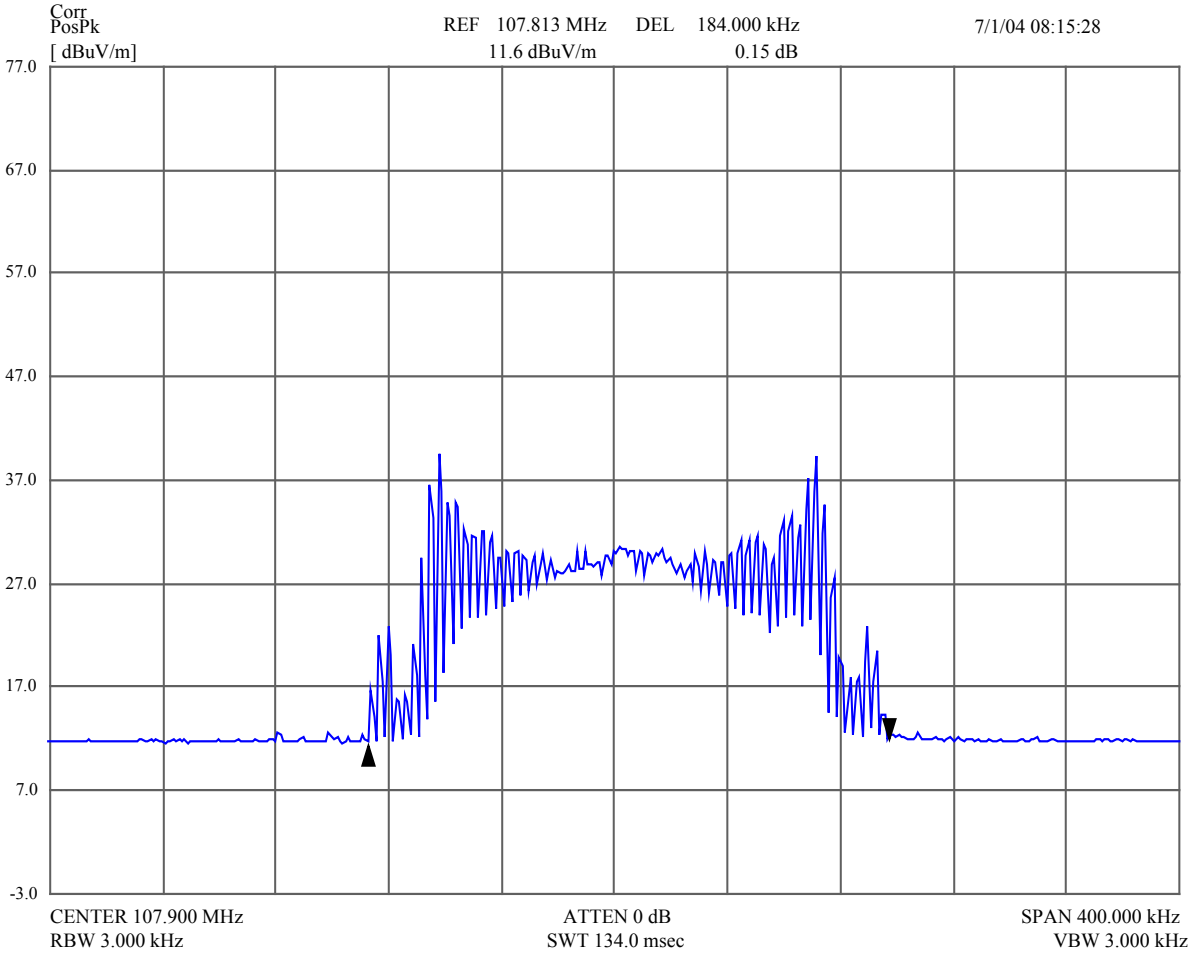
The plot shows the 26 dB bandwidth equals 170 kHz

7.2. Channel 107.5 MHz



The plot shows the 26 dB bandwidth equals 186 kHz

7.3. Channel 107.9 MHz



The plot shows the 26 dB bandwidth equals 184 kHz

7.4 Photographs of Test Set-Up

