

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
TESTED TO FCC PART 15 REQUIREMENTS**

For

INTENTIONAL RADIATOR

**FM WIRELESS UNIVERSAL HANDS FREE
TO BE USED WITH CELL PHONE INSIDE A VEHICLE**

MODEL NO: HFUFM

FCC ID: O8XHFUFM

REPORT NO: 00E8925

ISSUE DATE: SEPTEMBER 27, 2000

Prepared for

**AEOLUS ELECTRONIC CO., LTD.
2ND FLOOR, NO. 111-32, SEC. 4, SAN HO RD.
SANCHUNG CITY, TAIPEI HSIEN
TAIWAN, R. O. C.**

Prepared by

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TEST DATA

1. VERIFICATION OF COMPLIANCE

COMPANY NAME : AEOLUS ELECTRONIC CO., LTD.
2ND FLOOR, NO. 111-32, SEC. 4,
SAN HO ROAD, SANCHUNG CITY,
TAIPEI HSIEN, TAIWAN, R. O. C.

CONTACT PERSON : DUNG-YUAN TSAI / MANAGER

TELEPHONE NO. : (02) 2287-1482

EUT DESCRIPTION : FM WIRELESS UNIVERSAL HANDS FREE TO BE
USED WITH CELL PHONE INSIDE A VEHICLE

MODEL NAME/NUMBER : HFU FM

DATE TESTED : SEPTEMBER 20, 2000

REPORT NUMBER : 00E8925

TYPE OF EQUIPMENT	FM WIRELESS UNIVERSAL HANDS FREE TO BE USED WITH CELL PHONE INSIDE A VEHICLE
EQUIPMENT TYPE	88.3MHz TRANSMITTER
MEASUREMENT PROCEDURE	ANSI C63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in CFR 47, PART 15. This said equipment in the configuration described in this report shows that maximum emission levels emanating from equipment are within the compliance requirements. **Warning** : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification will constitute fraud and shall nullify the document.

Rick Yeo
RICK YEO / EMC MANAGER
COMPLIANCE ENGINEERING SERVICES, INC.

2. PRODUCT DESCRIPTION

Fundamental Frequency	88.3 MHz
Power Source	FROM VEHICLE DC
Usage	VEHICLE HANDS-FREE KIT
Power Requirement	12 VDC
Antenna Requirement	Permanently attached

3. TEST FACILITY

The 3/10/30 meter open area test site and conducted measurement facility used to collect the radiated data is located at 561F Monterey Road, Morgan Hill, California, U.S.A. A detailed description of the test facility was submitted to the Commission on May 27, 1994.

4. MEASUREMENT STANDARDS

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

5. TEST METHODOLOGY

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. MEASUREMENT EQUIPMENT USED

Manufacturer	Model No.	Description	Cal Due Date
H.P.	8566B	Spectrum Analyzer (100Hz – 22GHz)	12/00
H.P.	8595EM	Spectrum Analyzer (9KHz – 6.5GHz)	01/01
EMCO	3115	Antenna (1-18GHz)	09/01
EMCO	3142	Antenna (30-2000MHz)	06/01
H.P.	8447D B	Amplifier(30-1300MHz)	05/01
MITEQ	NSP2600-44	Amplifier(1-26GHz)	12/00

7. RADIATED EMISSION LIMITS

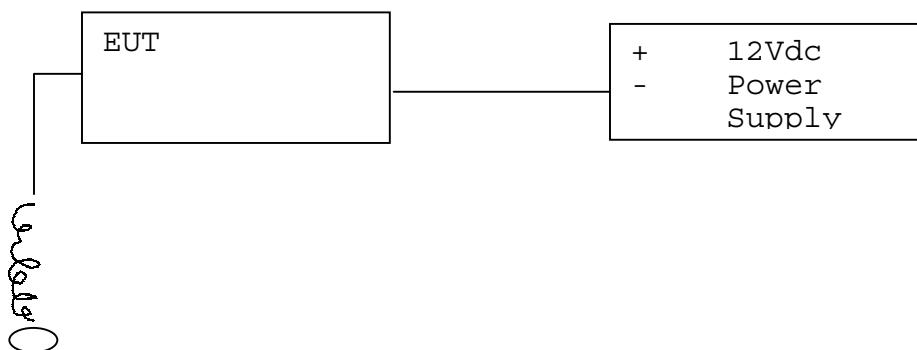
GENERAL REQUIREMENTS

SECTION 15.209, 15.239

8. SYSTEM TEST CONFIGURATION

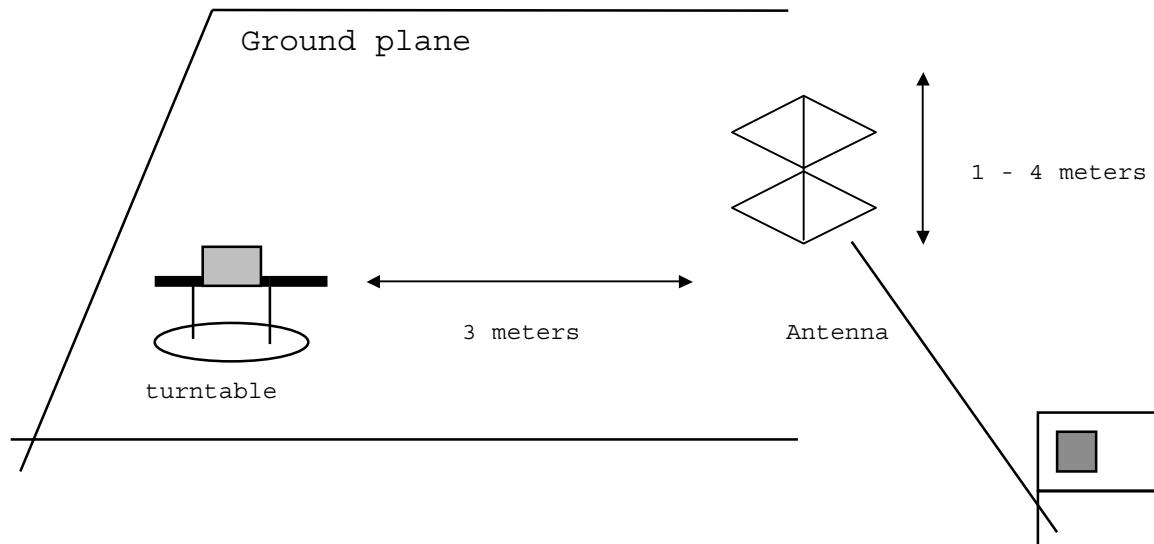
Used 12Vdc to activate the EUT.

Radiated Open Site Test Set-up



9. TEST PROCEDURE**Radiated Emissions, 15.209****Test Set-up for frequency range 30-1000 MHz**

Antenna mast

**Fig. 1**

preamplifier/spectrum analyzer

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3-meters from the EUT.
2. The turntable was slowly rotated to locate the direction of maximum emission. The EUT was moved throughout the.
3. Once maximum direction was determined, the search antenna was raised and lowered .The maximum readings so obtained are recorded in the data listed below.

Radiated Emissions, 15.239 (a) & 15.239(b), (c)

According to FCC 15.239(a), the EUT and accessories shall be placed on the 1 meter site in above configuration.

First, connect 12Vdc + and - pins of battery to the power inputs of EUT by using the wires to activate the continuous emissions.

Using a probe to detect the emission signal from the EUT and measure 88.7MHz EUT signal level on the screen of spectrum analyzer (HP 8595EM) with RES BW=VID BW=1KHz and Span Size = 200kHz.

Apply a low frequency signal of signal generator to #5 and #7 pin of HEADER connector of EUT using 2 wires.

Turn on the signal generator. Set up 2.5 kHz as a modulation frequency and adjust the output amplitude value to get the modulated FM signal with about 200kHz deviation. (See attached plots).

Measure the band width of FM modulated signal on the level 20dB down below the original CW signal.

A plot of such combined signal pattern was made. (See attached)

10. SETUP PHOTOS

11. TEST RESULT

All emissions were measured at 3 meters by using the following limits. Attached data sheet and plots show the passing radiation results to testing to 15.209 and 15.239.

The limit of any emissions in 80-108MHz shall not exceed 250uV (Or 48 dBuV/m) at 3 meters.

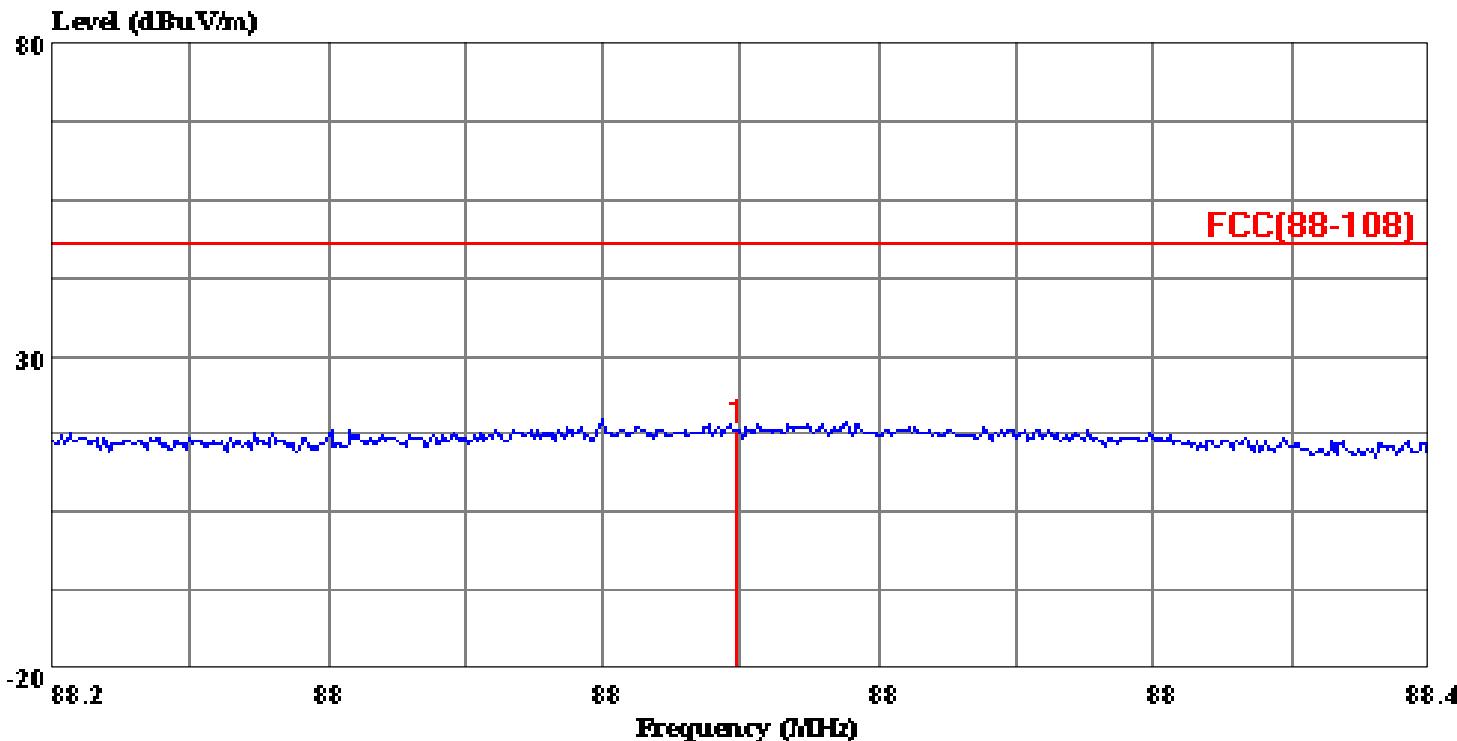
The test is based on measurement instrumentation employing average detector, not Q-P detection.

The test block diagram is without FM modulation signal input (CW EUT emission signal test only) at 3 meters.

The radiation limit of any frequency outside of band follows 15.209

Data#: **19** File#: 8925f.emi

Date: 2000-09-20 Time: 11:34:32


(CCS E-Site)

Trace: 16

Ref Trace:

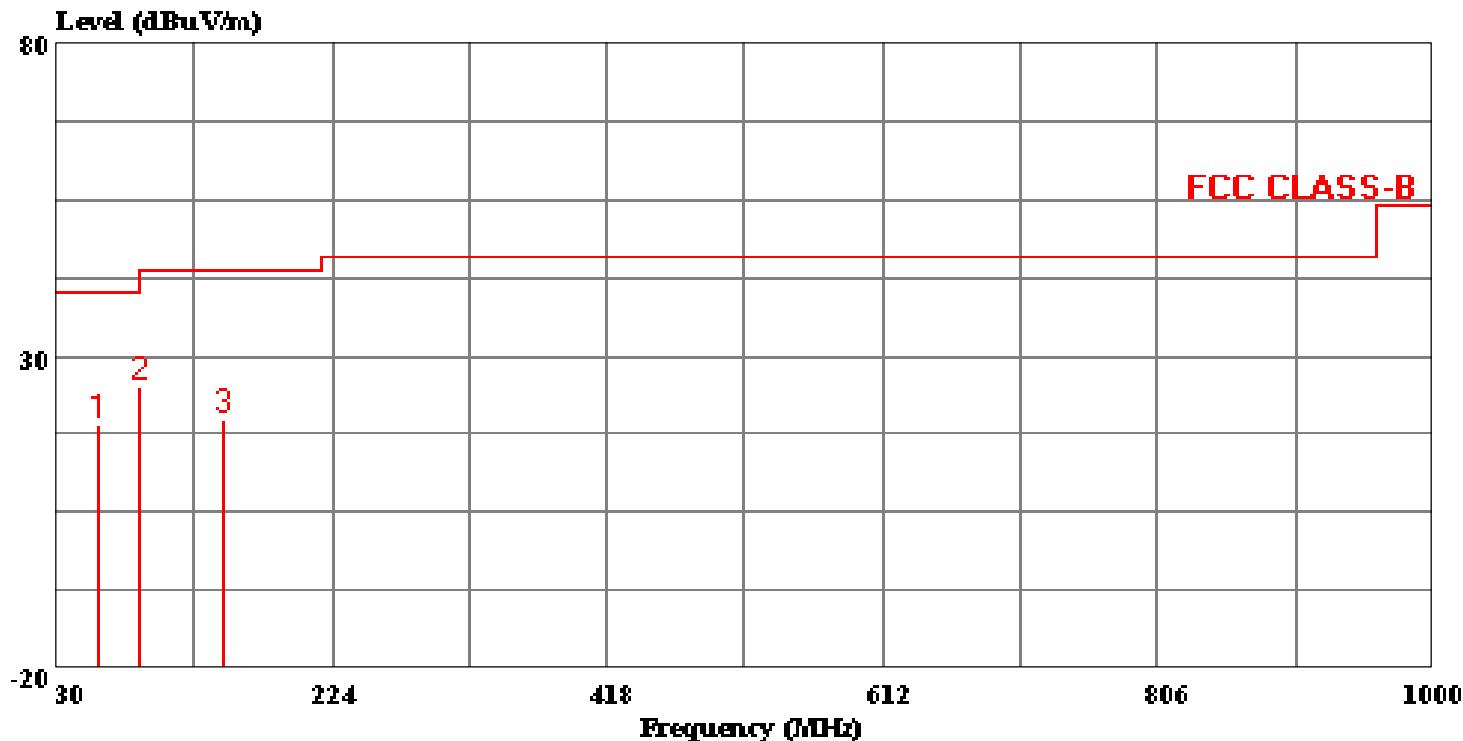
Condition: HORIZONTAL
Report No. : 00E8925
Test Engr. : VINCE CHIANG
Company : AEOLUS
EUT : HFUFM
Test Config : EUT/CELL PHONE/POWER SUPPLY
Type of Test: FCC 15.239
Mode of Op. : TX MODE
: 200KHz/Peak Reading Under Average Limit

Page: 1

	Read Freq	Probe Level	Cable Factor	Preamp Loss	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB _B uV	dB	dB	dB	dB _B uV/m	dB _B uV/m	dB
1	88.299	32.07	8.84	1.57	24.30	18.18	48.00	-29.82 Peak

Data#: 22 File#: 8925f.emi

Date: 2000-09-20 Time: 10:56:13


(CCS E-Site)

Trace:

Ref Trace:

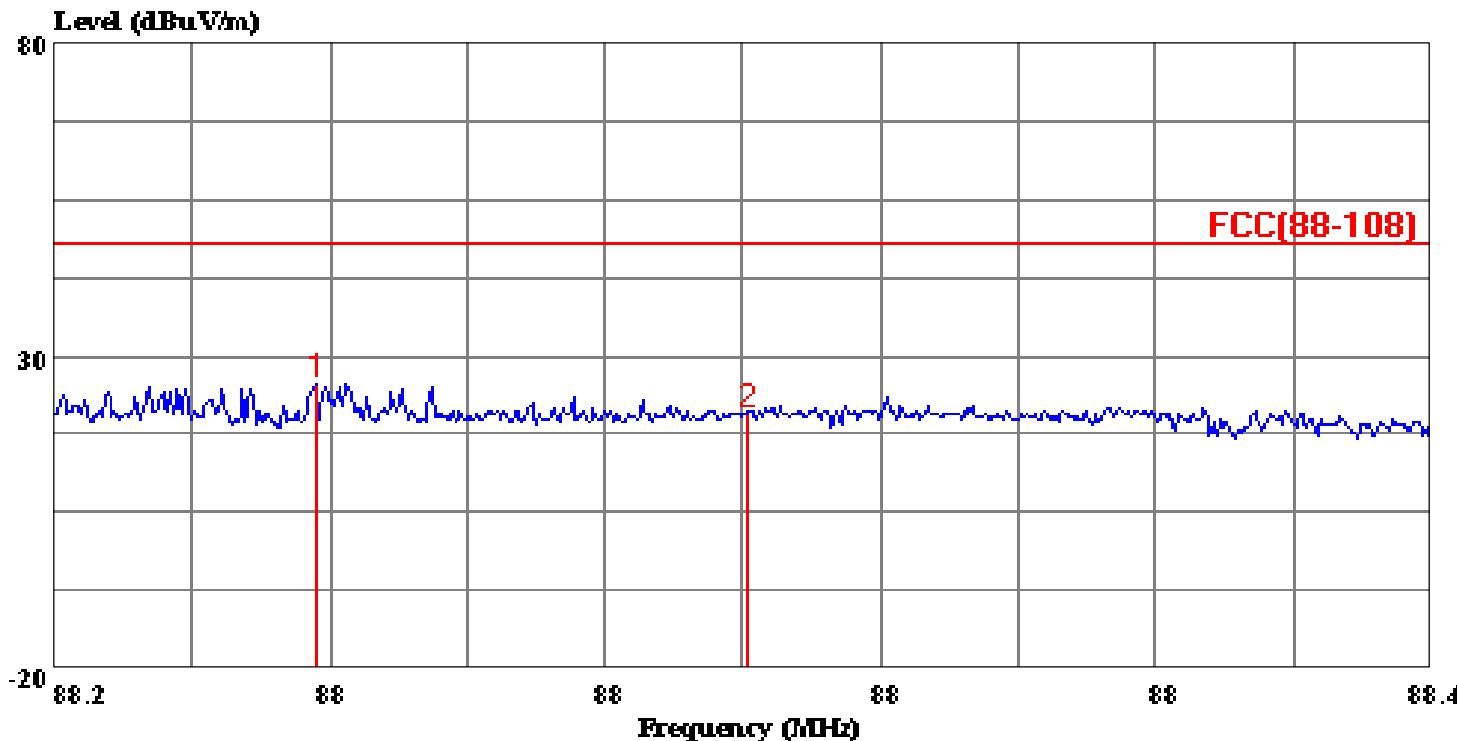
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Report No. : 00E8925
Test Engr. : VINCE CHIANG
Company : AEOLUS
EUT : HFUFM
Test Config : EUT/CELL PHONE/POWER SUPPLY
Type of Test: FCC 15.209
Mode of Op. : TX MODE

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	58.873	35.78	6.36	1.37	24.35	19.15	40.00	-20.85	
2	88.130	39.15	8.71	1.55	24.32	25.09	43.50	-18.41	
3	147.210	30.15	11.84	2.10	24.22	19.87	43.50	-23.63	

Data#: 21 File#: 8925f.emi

Date: 2000-09-20 Time: 11:33:42



(CCS E-Site)

Trace: 17

Ref Trace:

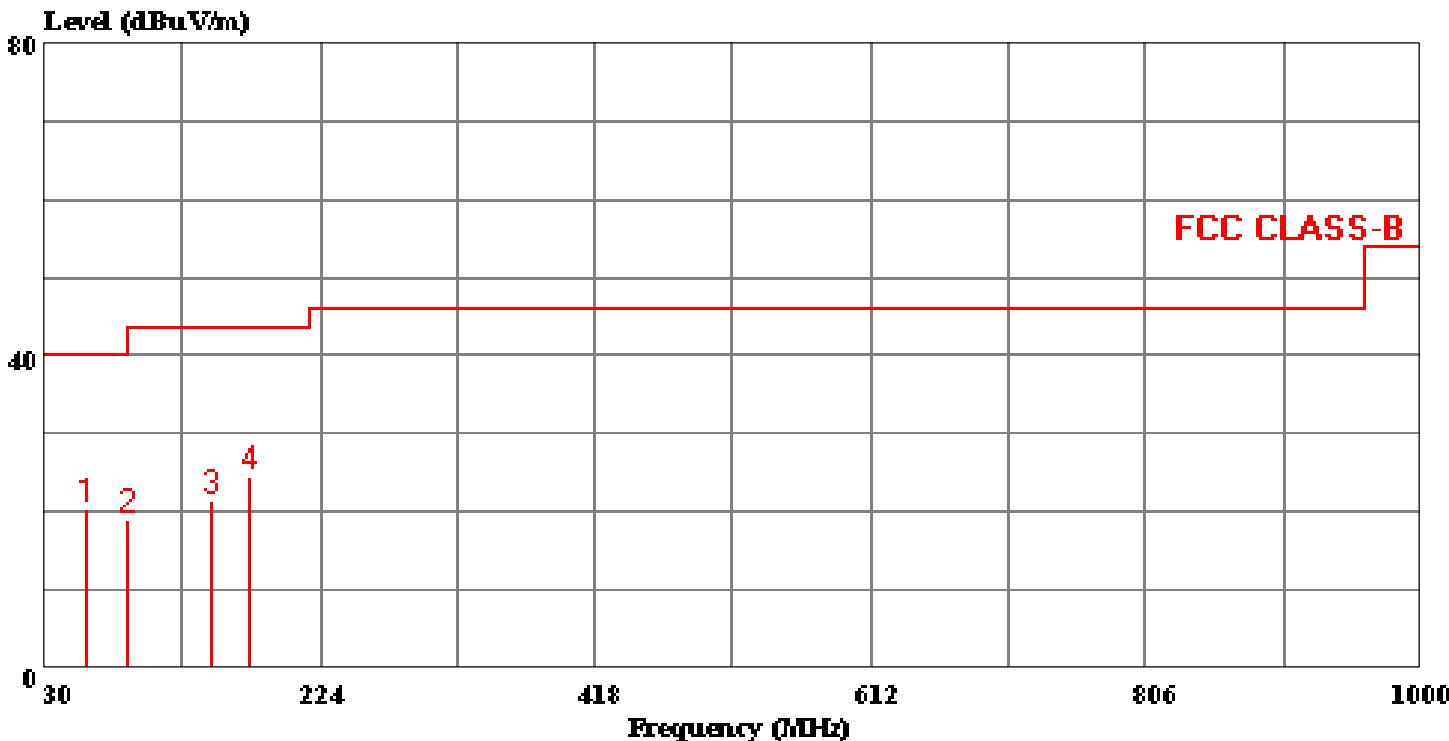
Condition: VERTICAL
 Report No. : 00E8925
 Test Engr. : VINCE CHIANG
 Company : AEOLUS
 EUT : HFUFM
 Test Config : EUT/CELL PHONE/POWER SUPPLY
 Type of Test: FCC 15.239
 Mode of Op. : TX MODE
 : 200KHz/Peak Reading Under Average Limit

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	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Limit Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	88.238	38.75	9.45	1.57	24.30	25.47	48.00	-22.53	Peak
2	88.301	34.16	9.45	1.57	24.30	20.88	48.00	-27.12	Peak

Data#: 23 File#: 8925f.emi

Date: 2000-09-20 Time: 10:36:00



(CCS E-Site)

Trace:

Ref Trace:

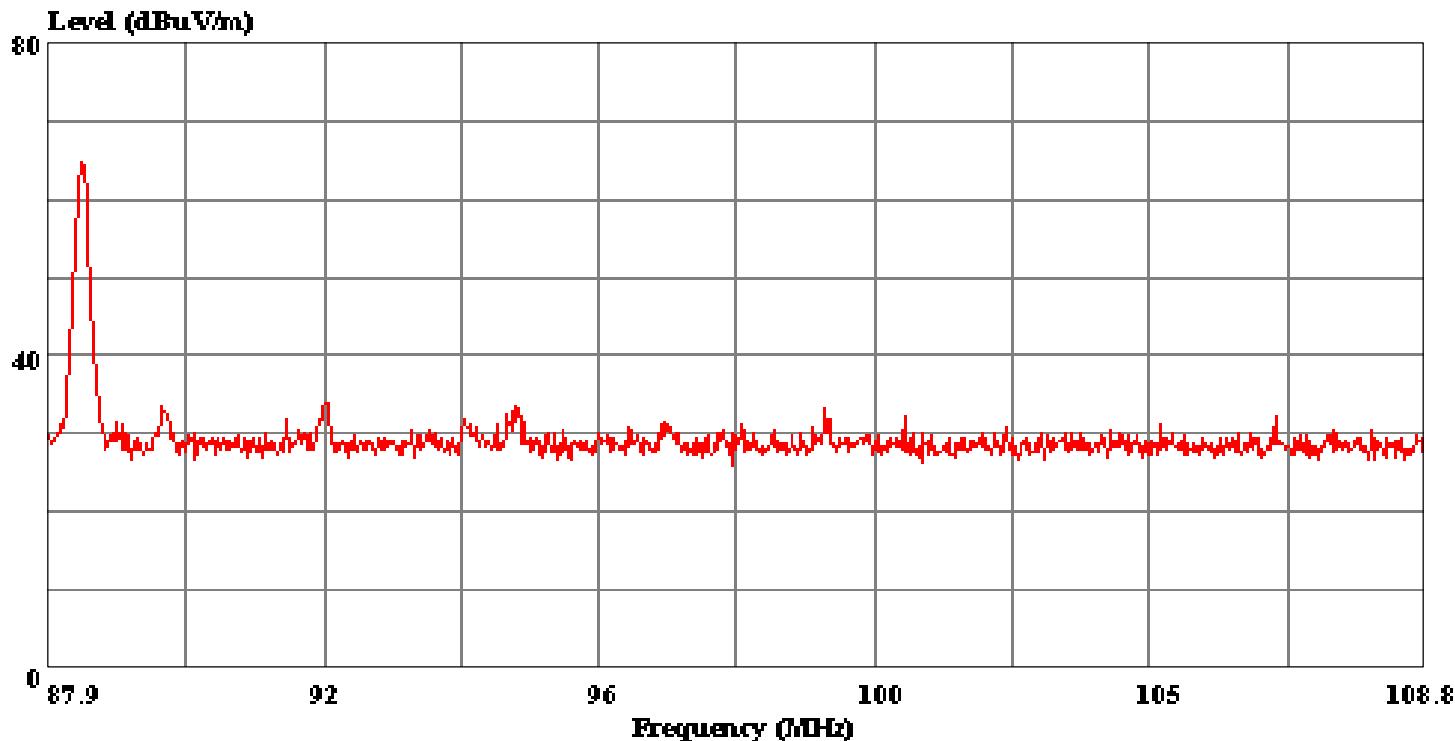
Condition: VERTICAL
 Report No. : 00E8925
 Test Engr. : VINCE CHIANG
 Company : AEOLUS
 EUT : HFUFM
 Test Config : EUT/CELL PHONE/POWER SUPPLY
 Type of Test: FCC 15.209
 Mode of Op. : TX MODE

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	58.878	37.80	5.47	1.37	24.35	20.28	40.00	-19.72	Peak
2	88.482	32.48	9.45	1.57	24.31	19.19	43.50	-24.31	Peak
3	146.944	30.83	12.64	2.10	24.22	21.35	43.50	-22.15	Peak
4	175.240	35.83	10.51	2.20	24.01	24.53	43.50	-18.97	Peak

Data#: 20 File#: 8925f2.emi

Date: 2000-10-18 Time: 18:05:12



(CCS E-Site)

Trace:

Ref Trace:

Report No. : 00E8925
Test Engr. : VINCE CHIANG
Company : AEOLUS
EUT : HFUFM
Test Config : EUT/CELL PHONE/POWER SUPPLY
Type of Test: FCC 15.239(a)
Mode of Op. : PROBE TO EUT/0M