ADDENDUM TO PHONIC EAR TEST REPORT FC04-012A

FOR THE

BODY WORN TRANSMITTER, EASY LISTENER-2 330T-216 MHZ

FCC PART 95 AND RSS 210

COMPLIANCE

DATE OF ISSUE: MARCH 24, 2004

PREPARED FOR:

Phonic Ear
3880 Cypress Drive
Petaluma, CA 94954-7600

P.O. No.: p112359
W.O. No.: 81765

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: January 20 – February 10, 2004

Report No.: FC04-012B

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ADMINISTRATIVE INFORMATION

DATE OF TEST:	January 20 – February 10, 2004
DATE OF RECEIPT:	January 20, 2004
PURPOSE OF TEST:	To demonstrate the compliance of the Body Worn Transmitter, Easy Listener-2 330T-216 MHz with the requirements for FCC Part 95 and RSS 210 devices. **Addendum A** is to revise the OATS RF power data sheets and revise the test conditions to the OATS testing. **Addendum B** is to revise the OATS RF power data table and the operating power on page 7.
TEST METHOD:	FCC Part 95, RSS 210 and TIA/EIA 603
FREQUENCY RANGE TESTED:	20 MHz - 2000 MHz
MANUFACTURER:	LeeMah Electronics, Inc. Fremont, CA
REPRESENTATIVE:	Jeff Davies
TEST LOCATION:	CKC Laboratories, Inc. 480 Los Viboras Road, Hollister, CA 95023 1120 Fulton Place, Fremont, CA 94539

SUMMARY OF RESULTS

As received, the Phonic Ear Body Worn Transmitter, Easy Listener-2 330T-216MHz was found to be fully compliant with the following standards and specifications:

United States
- FCC Part 95

FCC Site Filing No. 90479 & 90477

Canada
RSS-210 using:
- FCC Part 95

Canada Site Filing No. IC 3171-B & 3082-B

COMPARISON MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 210	5.5	47CFR	15.203	Antenna Connector Requirements
RSS 210	6.2.2(L2)	47CFR	95.629	Two Way Voice Prohibited
RSS 210	6.2.2(L2)	47CFR	95.637	Peak Output Power Requirements (100mW)
RSS 210	6.2.2(L2)	47CFR	95.1013	Peak Output Power Requirements FCC: 100mW ERP Canada: 160mW ERP
RSS 210	6.2.2(L2)	N/A	N/A	Canada Channel 13 Advisory
RSS 210	6.2.2(L2)	47CFR	95.633	Emission Bandwidth
RSS 210	6.2.2(L2)	47CFR	95.635	Emission Mask
RSS 210	6.2.2(L2)	N/A	N/A	Instrumentation for Mask (Peak 300Hz RBW)
RSS 210	6.3	47CFR	15.205	Restricted Bands of Operation
RSS 210	6.4	47CFR	15.215(c)	Frequency Stability Recommendation
RSS 210	6.5	47CFR	15.35(c)	Pulsed Operation
RSS 210	6.6	47CFR	15.207	AC Mains Conducted Emissions Requirement

CONDITIONS FOR COMPLIANCE
No modifications to the EUT were necessary to comply.

APPROVALS

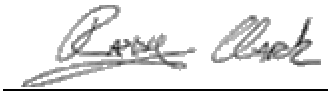
Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

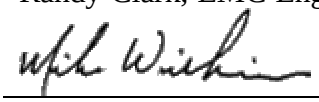
Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Matthew Pettersen, EMC Test Engineer



Randy Clark, EMC Engineer



Mike Wilkinson, Lab Manager

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit

EQUIPMENT UNDER TEST

Body Worn Transmitter

Manuf: Phonic Ear, Inc.
Model: Easy Listener-2 330T-216 MHz
Serial: FCC 04 00060
FCC ID: pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral devices:

CD Player

Manuf: Panasonic
Model: SL-S321C
Serial: FA7HF96862
FCC ID: pending

MEASUREMENT UNCERTAINTY

TEST	HIGHEST UNCERTAINTY
Radiated Emissions	+/- 2.94 dB
Conducted Emissions	+/- 1.56 dB

Note: Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Statements of compliance are based on the nominal values only.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c)(3) USER'S MANUAL
The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS
F3E

FCC 2.1033 (c)(5) FREQUENCY RANGE
Operates on Extra Band channels every 50kHz, with the center frequency starting at 216.025 MHz and ending at 216.975 MHz, excluding restricted bands at 216.450 MHz & 216.500 MHz.

FCC 2.1033 (c)(6) OPERATING POWER
33.7 mW.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
100 mW

FCC 2.1033 (c)(8) DC VOLTAGES
The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE
The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION
The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT
The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS
The necessary information is contained in a separate document.

FCC 2.1033(c)(13) MODULATION INFORMATION
The necessary information is contained in a separate document.

FCC 2.1033(c)(14)/2.1046/95.637 - RF POWER OUTPUT (ANTENNA CONDUCTED)

Bandwidth settings used: RBW=100kHz, VBW=100kHz.

Test Location: CKC Laboratories, Inc. •480 Los Viboras Rd • Hollister, CA 95023 • 1-800-500-4EMC (4362)

Customer: **Phonic Ear**
Specification: **95.637 RF Power Output**
Work Order #: **81765** Date: 01/21/2004
Test Type: **Spurious Emissions** Time: 14:32:34
Equipment: **Body Worn Transmitter** Sequence#: 10
Manufacturer: Phonic Ear, Inc. Tested By: Matthew Pettersen
Model: Easy Listener-2 330-216MHz
S/N: FCC 04 00041

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00041

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is a body worn transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer. RF Power Output. Frequency Range Investigated: Fundamental 216.025 MHz, Channel 41. Output Ratings: All: 10mW. Spec limit: All: 100mW.

Transducer Legend:

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	216.026M	116.2					+0.0	116.2	127.0	-10.8	None

Test Location: CKC Laboratories, Inc. •480 Los Viboras Rd • Hollister, CA 95023 • 1-800-500-4EMC (4362)

Customer: **Phonic Ear**
Specification: **95.637 RF Power Output**
Work Order #: **81765** Date: 01/21/2004
Test Type: **Spurious Emissions** Time: 14:27:23
Equipment: **Body Worn Transmitter** Sequence#: 9
Manufacturer: Phonic Ear, Inc. Tested By: Matthew Pettersen
Model: Easy Listener-2 330-216MHz
S/N: FCC 04 00060

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00060

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is a body worn transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer. RF Power Output Frequency Range Investigated: Fundamental 216.975 MHz, Channel 60. Output Ratings: All: 10mW. Spec limit: All: 100mW.

Transducer Legend:

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	216.963M	116.2					+0.0	116.2	127.0	-10.8	None

RF Antenna Port Test Setup

FCC 2.1033(c)(14)/2.1046/95.1013 - RF POWER OUTPUT (OATS)

Bandwidth settings used: RBW=100kHz, VBW=100kHz.

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Ant., Bilog, Chase CBL6111C	2630	10/04/2002	10/04/2004	852
QP Adapter HP-85650A	2043A00188	10/08/2002	10/08/2004	1508
Cable, H-B 3M Rad., .01-1000MHz	rad_cab_3M_03_hol-b.01-1000MHz	08/04/2003	08/04/2005	0
S.A., Display HP-85662A	2542A10641	03/11/2003	03/11/2004	1377
S.A., RF Section HP-8568B	2601A02378	03/11/2003	03/11/2004	1377

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00041
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00060

Support Devices:

Function	Manufacturer	Model #	S/N
CD Player	Panasonic	SL-S321C	FA7HF96862

Test Conditions / Notes:

The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer-supplied microphone with headset is connected to the EUT. A cable is connected to the AUX port on the EUT, which is typically used for a second microphone connection. This cable is connected to a CD player used for termination only. RF Power Output. Frequency Range Investigated: Fundamental 216.025 MHz, Channel 41 and 216.975 MHz, Channel 60. Output Ratings: All: 10mW. Spec limit: All: 100mW. The EUT was verified in multiple orientations to ensure the worst case configuration for RF emissions including orientating the EUT and antenna in an upright position on a PVC pipe. The worst case configuration was tested and recorded. RF emissions were not attenuated in this configuration.

Frequency		Watts (ERP)
216.026 MHz	Horizontal	0.02741574
216.020 MHz	Vertical	0.00657658
216.960 MHz	Horizontal	0.03372873
216.961 MHz	Vertical	0.00378443

This was derived by using the calculation: X+11.88 (to correct from 3meters to 0meters) - 107=#, 10log(#/10)/1000=W, where X=RF power output in dBuV/m at 3meters.

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

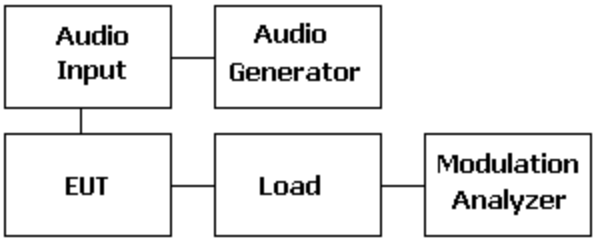
PHOTOGRAPH SHOWING RADIATED EMISSIONS

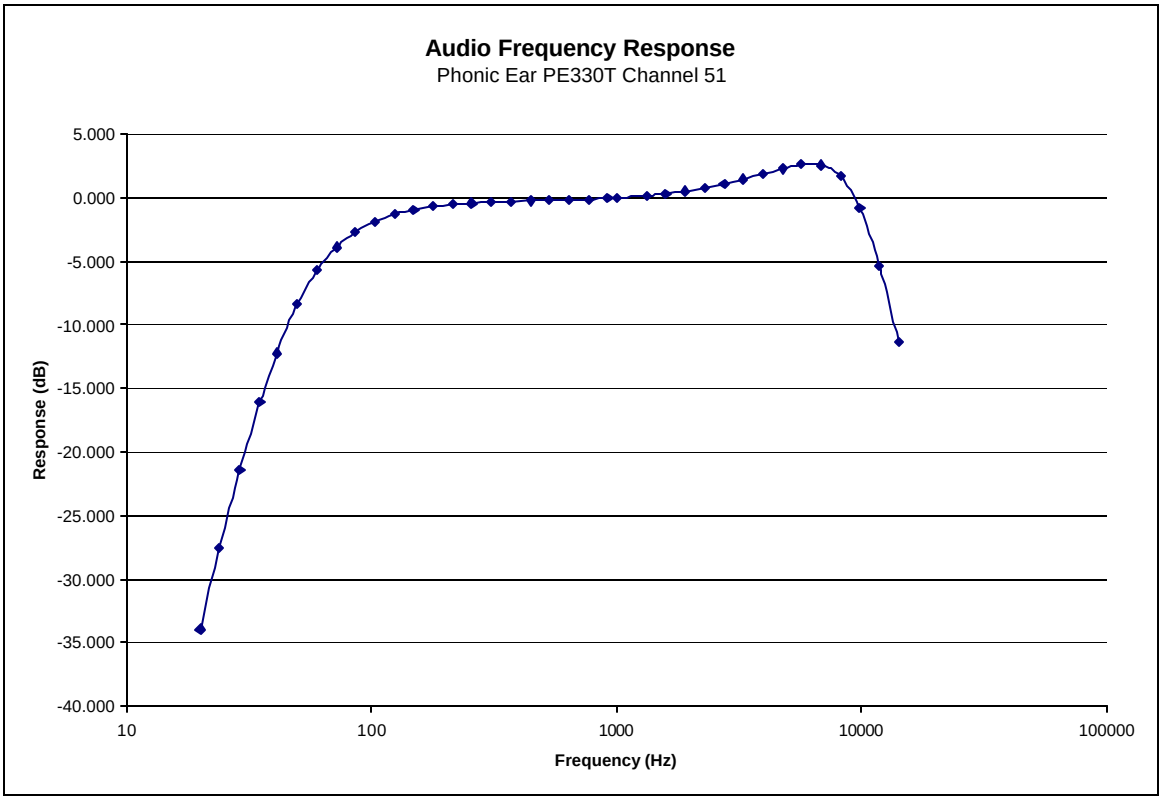
Radiated Emissions - Back View

FCC 2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

The test setup is in accordance with TIA/EIA 603 2.2.6.2.2 Constant Input Method. The EUT is functioning normally. EUT is powered by an external DC power source for consistency. The modulation limiting curve is plotted from 20Hz to 20kHz.

Audio Frequency Response Setup Diagram

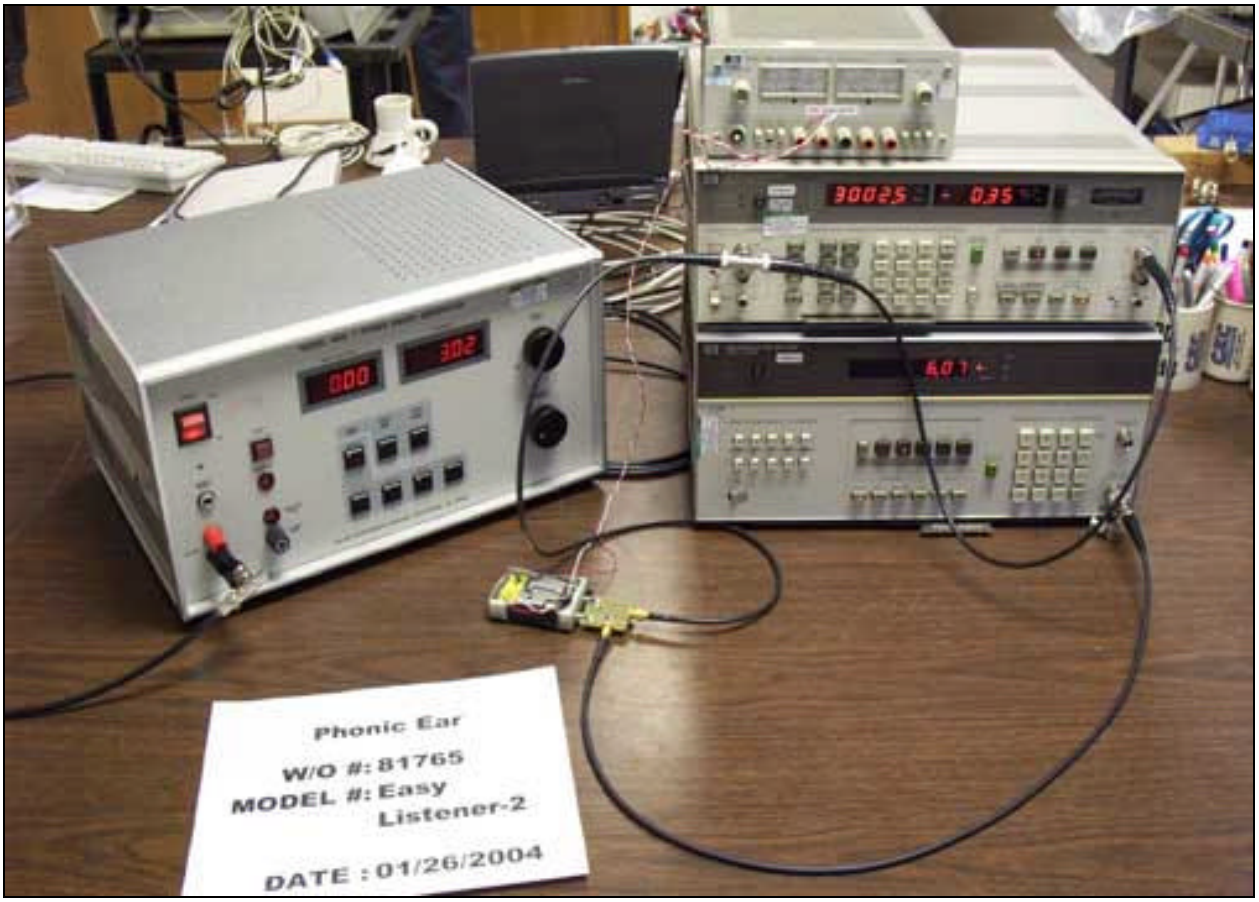




Test Equipment List

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Analyzer, Audio	02338	HP	8903B	3011A09432	11/27/02	11/26/04
Analyzer, Modulation	02072	HP	8901A	2751A05181	11/27/02	11/26/04
Power Supply, DC	00762	HP	6205C	2228A01775	6/5/03	6/4/05

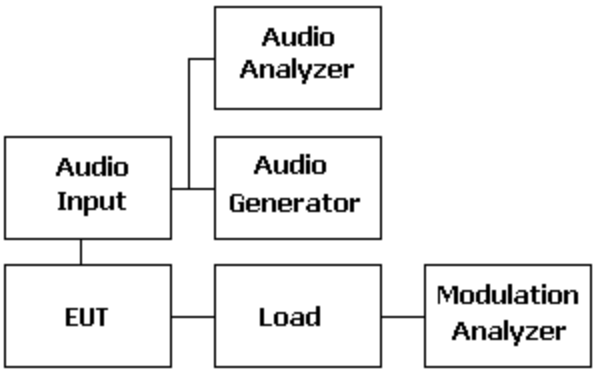
2.1047 Test Setup

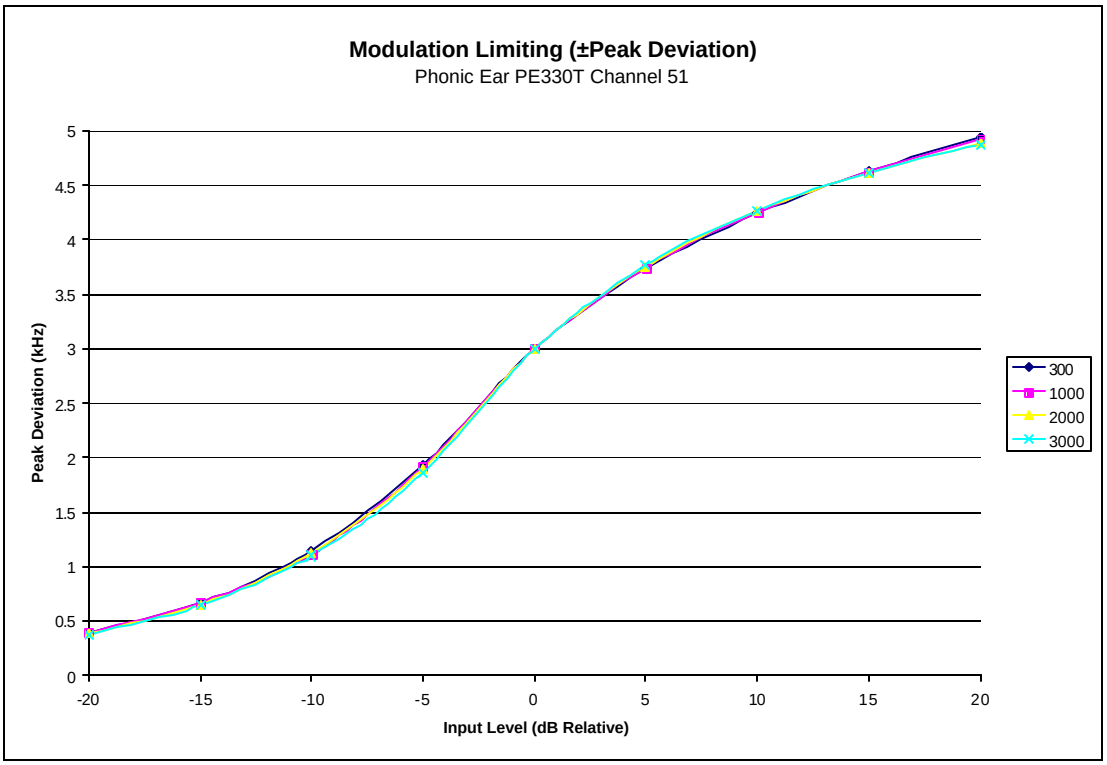


FCC 2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS – Modulation Limiting Response

The test setup is in accordance with TIA/EIA 603. The EUT is functioning normally. EUT is powered by an external DC power source for consistency. A family of curves is plotted as a function of input modulation relative to 60% of the manufacturer's declared maximum system deviation. The frequencies chosen are 500Hz, 1kHz, 2kHz and 3kHz.

Modulation Limiting Setup

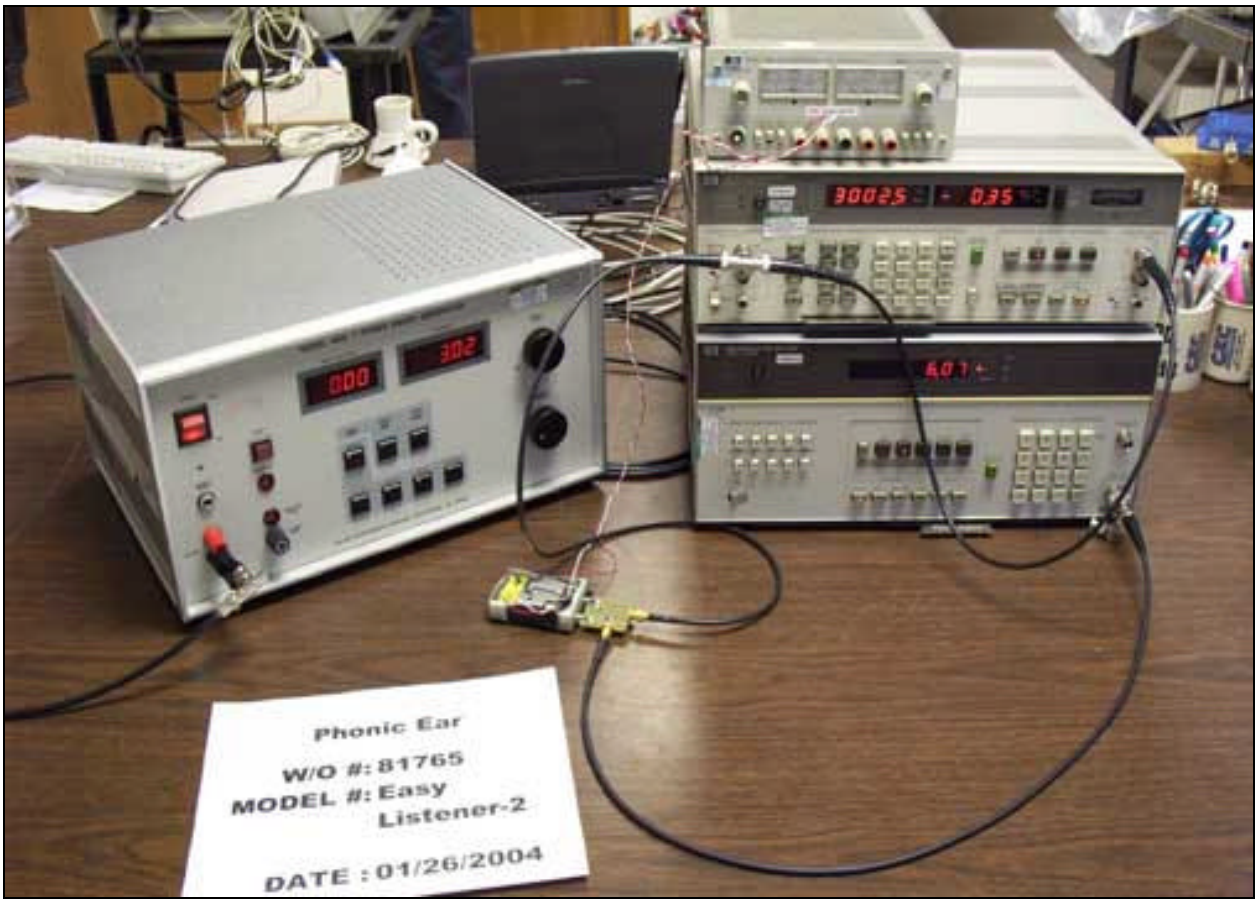




Test Equipment List:

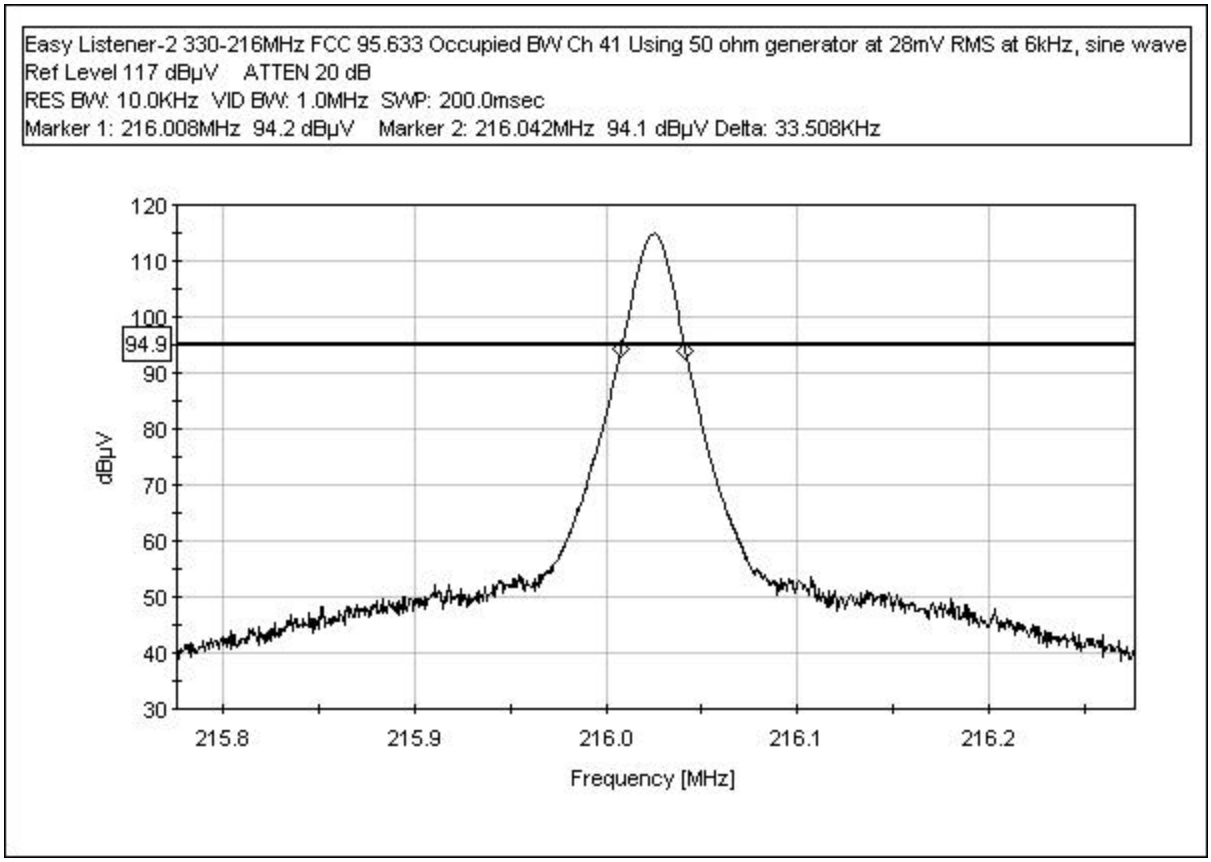
Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Analyzer, Audio	02338	HP	8903B	3011A09432	11/27/02	11/26/04
Analyzer, Modulation	02072	HP	8901A	2751A05181	11/27/02	11/26/04
Power Supply, DC	00762	HP	6205C	2228A01775	6/5/03	6/4/05
Generator, Power Sweep	01675	Solar	8850-1	970502	11/25/02	11/24/04

2.1047 Test Setup

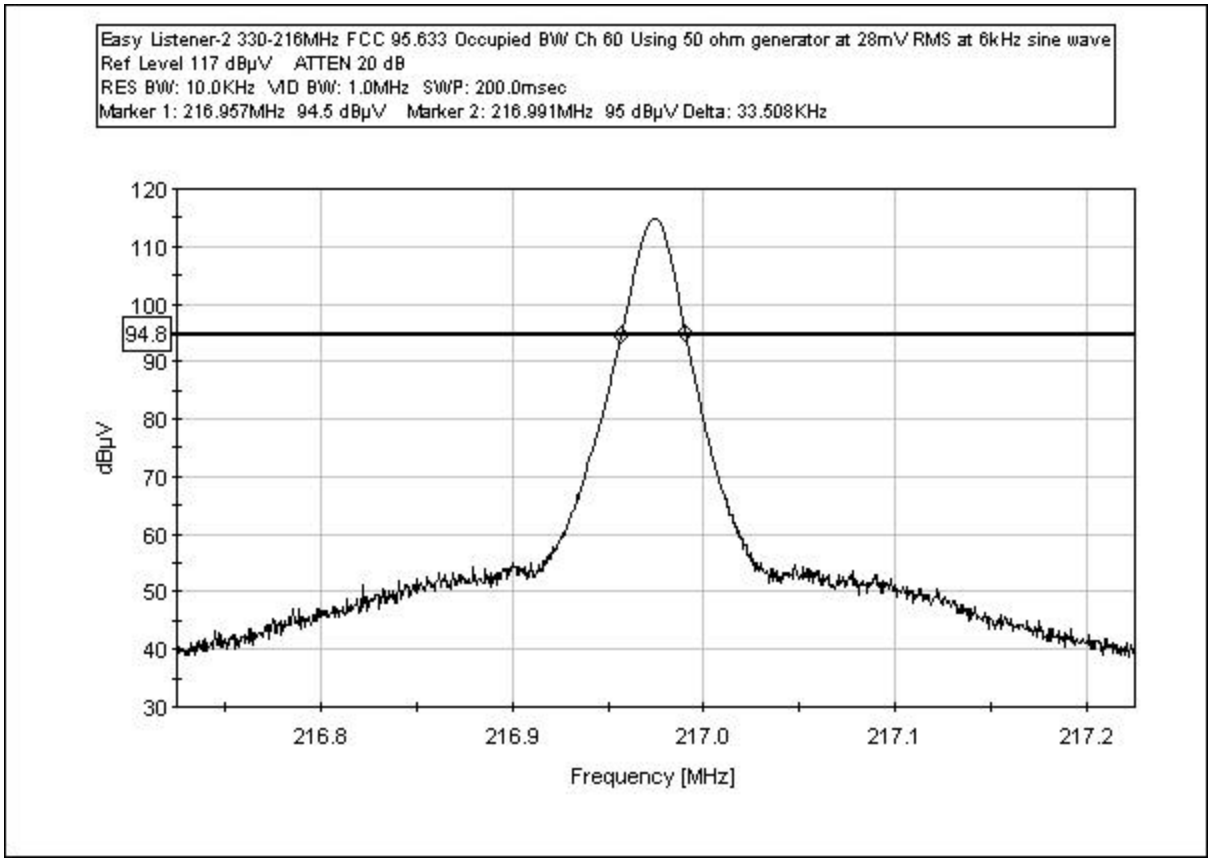


FCC 2.1033(c)(14)/2.1049(i)/95.633- OCCUPIED BANDWIDTH

Test Conditions: The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer.



FCC 95.633 OCCUPIED BANDWIDTH CHANNEL 60



***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8564E	3623A00539	06/27/2002	06/27/2004	1406
Signal Generator, HP 8656A	2409A6553	01/30/2003	10/30/2004	00508

Direct Connect

FCC 2.1033(c)(14)/2.1051/95.635(c) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Bandwidth settings used: RBW=100kHz, VBW=100kHz.

Test Location:	CKC Laboratories, Inc. •480 Los Viboras Rd • Hollister, CA 95023 • 1-800-500-4EMC (4362)		
Customer:	**Phonic Ear**		
Specification:	**95.635(c)**		
Work Order #:	**81765**	Date:	01/21/2004
Test Type:	**Spurious Emissions**	Time:	12:53:52
Equipment:	**Body Worn Transmitter**	Sequence#:	8
Manufacturer:	Phonic Ear, Inc.	Tested By:	Matthew Pettersen
Model:	Easy Listener-2 330-216MHz		
S/N:	FCC 04 00041		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783
Signal Generator, HP 8656A	2409A6553	01/30/2003	10/30/2004	00508

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00041

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is a body worn transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer. Spurious emissions 20 – 2200 MHz.

Transducer Legend:

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	216.026M	115.8					+0.0	115.8	117.0 Fundamental	-1.2	None
2	2158.321M	68.6					+0.0	68.6	94.0	-25.4	None
3	2086.633M	66.4					+0.0	66.4	94.0	-27.6	None
4	648.246M	65.5					+0.0	65.5	94.0	-28.5	None
5	2014.946M	64.1					+0.0	64.1	94.0	-29.9	None

6	1728.195M	63.8	+0.0	63.8	94.0	-30.2	None
7	143.989M	63.2	+0.0	63.2	94.0	-30.8	None
8	776.419M	61.5	+0.0	61.5	94.0	-32.5	None
9	1295.892M	60.8	+0.0	60.8	94.0	-33.2	None
10	181.250M	59.4	+0.0	59.4	94.0	-34.6	None
11	791.545M	59.3	+0.0	59.3	94.0	-34.7	None
12	1079.971M	59.2	+0.0	59.2	94.0	-34.8	None
13	432.170M	59.1	+0.0	59.1	94.0	-34.9	None
14	1438.506M	58.3	+0.0	58.3	94.0	-35.7	None
15	719.895M	58.0	+0.0	58.0	94.0	-36.0	None
16	1223.918M	57.9	+0.0	57.9	94.0	-36.1	None
17	1656.507M	57.1	+0.0	57.1	94.0	-36.9	None
18	936.170M	56.3	+0.0	56.3	94.0	-37.7	None
19	1943.258M	55.6	+0.0	55.6	94.0	-38.4	None
20	1366.532M	55.4	+0.0	55.4	94.0	-38.6	None
21	1799.883M	54.1	+0.0	54.1	94.0	-39.9	None
22	1871.570M	53.6	+0.0	53.6	94.0	-40.4	None
23	863.194M	53.4	+0.0	53.4	94.0	-40.6	None
24	1151.944M	52.2	+0.0	52.2	94.0	-41.8	None
25	192.102M	51.7	+0.0	51.7	94.0	-42.3	None
26	1510.480M	51.7	+0.0	51.7	94.0	-42.3	None
27	1584.820M	51.3	+0.0	51.3	94.0	-42.7	None
28	781.195M	50.5	+0.0	50.5	94.0	-43.5	None
29	1009.330M	49.8	+0.0	49.8	94.0	-44.2	None
30	288.321M	49.5	+0.0	49.5	94.0	-44.5	None

Test Location:	CKC Laboratories, Inc. •480 Los Viboras Rd • Hollister, CA 95023 • 1-800-500-4EMC (4362)		
Customer:	**Phonic Ear**		
Specification:	**95.635(c)**		
Work Order #:	**81765**	Date:	01/21/2004
Test Type:	**Spurious Emissions**	Time:	12:41:30
Equipment:	**Body Worn Transmitter**	Sequence#:	7
Manufacturer:	Phonic Ear, Inc.	Tested By:	Matthew Pettersen
Model:	Easy Listener-2 330-216MHz		
S/N:	FCC 04 00060		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783
Signal Generator, HP 8656A	2409A6553	01/30/2003	10/30/2004	00508

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00060

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is a body worn transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer. Spurious emissions 20 – 2200 MHz.

Transducer Legend:

Measurement Data: Reading listed by margin. Test Distance: None

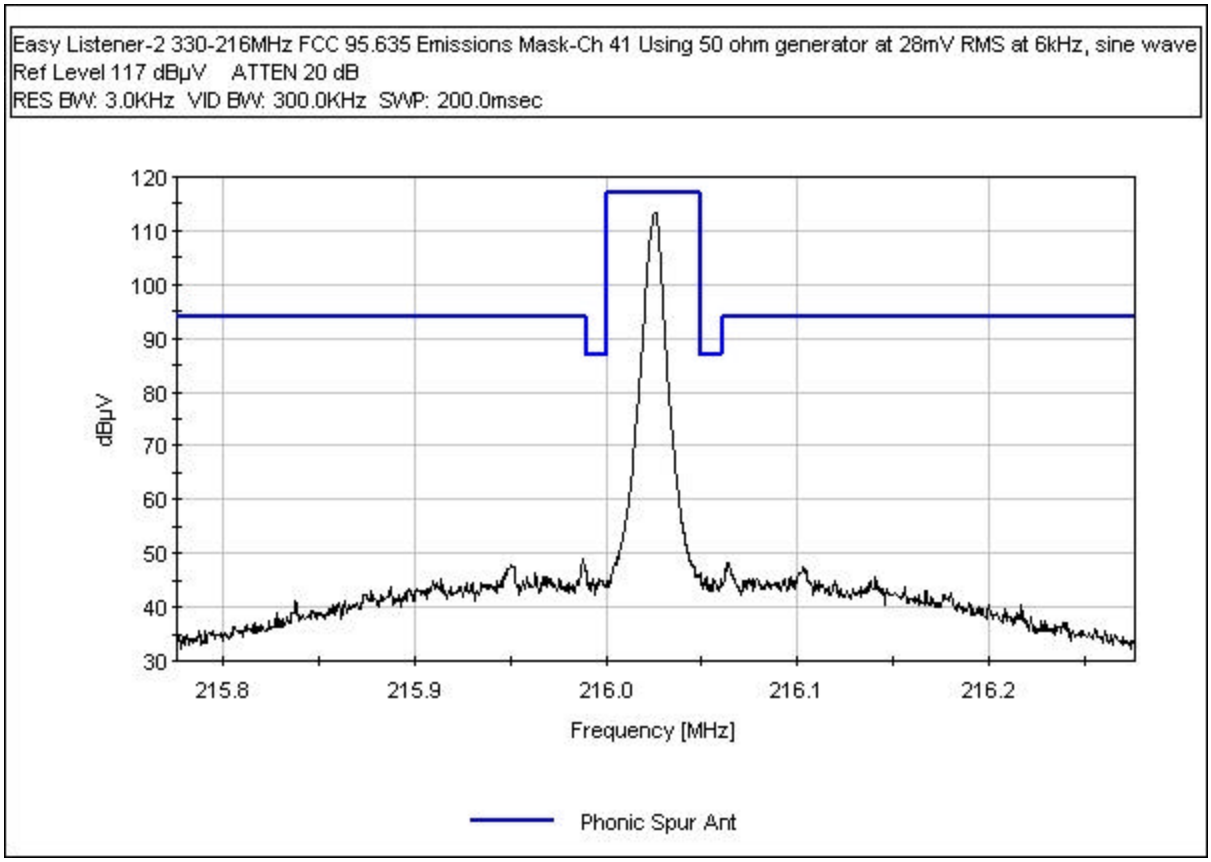
#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	216.974M	115.8					+0.0	115.8	117.0 Fundamental	-1.2	None
2	2096.636M	69.1					+0.0	69.1	94.0	-24.9	None
3	192.988M	66.7					+0.0	66.7	94.0	-27.3	None
4	144.565M	64.7					+0.0	64.7	94.0	-29.3	None
5	651.431M	64.0					+0.0	64.0	94.0	-30.0	None
6	1229.249M	63.3					+0.0	63.3	94.0	-30.7	None
7	795.525M	62.9					+0.0	62.9	94.0	-31.1	None
8	867.174M	62.5					+0.0	62.5	94.0	-31.5	None

9	2168.324M	62.2	+0.0	62.2	94.0	-31.8	None
10	434.247M	61.4	+0.0	61.4	94.0	-32.6	None
11	2023.281M	61.4	+0.0	61.4	94.0	-32.6	None
12	241.046M	61.0	+0.0	61.0	94.0	-33.0	None
13	723.080M	60.4	+0.0	60.4	94.0	-33.6	None
14	1085.302M	60.3	+0.0	60.3	94.0	-33.7	None
15	1663.176M	60.2	+0.0	60.2	94.0	-33.8	None
16	1445.170M	60.1	+0.0	60.1	94.0	-33.9	None
17	181.471M	59.9	+0.0	59.9	94.0	-34.1	None
18	777.215M	59.5	+0.0	59.5	94.0	-34.5	None
19	1736.531M	59.0	+0.0	59.0	94.0	-35.0	None
20	216.906M	58.3	+0.0	58.3	94.0	-35.7	None
21	1879.906M	56.6	+0.0	56.6	94.0	-37.4	None
22	1373.197M	56.2	+0.0	56.2	94.0	-37.8	None
23	1013.328M	55.5	+0.0	55.5	94.0	-38.5	None
24	1301.223M	55.4	+0.0	55.4	94.0	-38.6	None
25	1808.218M	55.0	+0.0	55.0	94.0	-39.0	None
26	940.173M	54.0	+0.0	54.0	94.0	-40.0	None
27	1157.276M	51.7	+0.0	51.7	94.0	-42.3	None
28	1591.488M	51.6	+0.0	51.6	94.0	-42.4	None
29	1951.594M	50.7	+0.0	50.7	94.0	-43.3	None
30	185.901M	49.8	+0.0	49.8	94.0	-44.2	None
31	781.195M	49.2	+0.0	49.2	94.0	-44.8	None

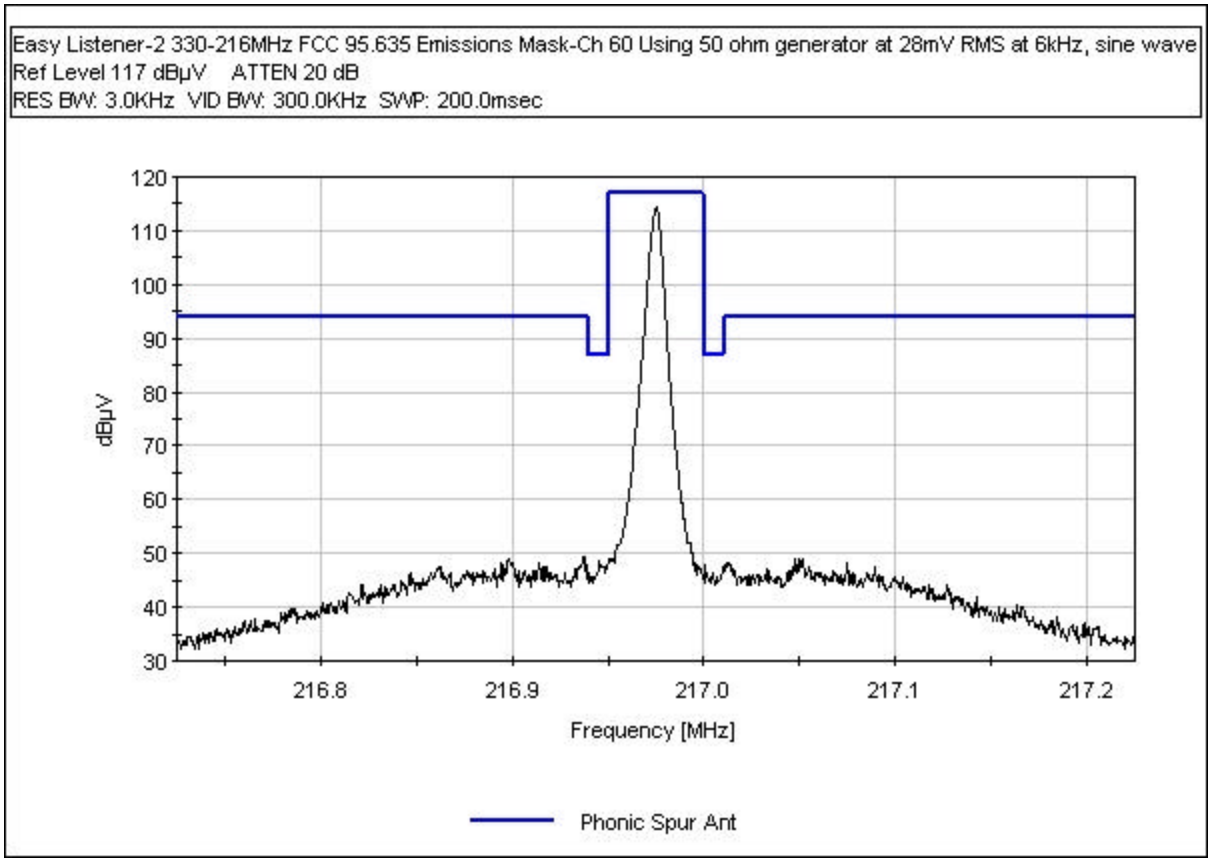
Direct Connect

FCC 95.635 Emissions Mask Channel 41

Test Conditions: The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer.



FCC 95.635 EMISSIONS MASK CHANNEL 60



***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator, HP 8656A	2409A6553	01/30/2003	10/30/2004	00508

Direct Connect

FCC 2.1033(c)(14)/2.1053/95.635(c) - FIELD STRENGTH OF SPURIOUS RADIATION

Bandwidth settings used: RBW=100kHz, VBW=100kHz.

Test Location: CKC Laboratories, Inc. •480 Los Viboras Rd • Hollister, CA 95023 • 1-800-500-4EMC (4362)

Customer:	**Phonic Ear**		
Specification:	**95.635(c) OATS**		
Work Order #:	**81765**	Date:	01/21/2004
Test Type:	**Spurious Emissions**	Time:	16:55:25
Equipment:	**Body Worn Transmitter**	Sequence#:	6
Manufacturer:	Phonic Ear, Inc.	Tested By:	Matthew Pettersen
Model:	Easy Listener-2 330-216MHz		
S/N:	FCC 04 00041		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Ant., Bilog, Chase CBL6111C	2630	10/04/2002	10/04/2004	852
QP Adapter HP-85650A	2043A00188	10/08/2002	10/08/2004	1508
Cable, H-B 3M Rad., .01-1000MHz	rad_cab_3M_03_hol-b.01-1000MHz	08/04/2003	08/04/2005	0
S.A., Display HP-85662A	2542A10641	03/11/2003	03/11/2004	1377
S.A., RF Section HP-8568B	2601A02378	03/11/2003	03/11/2004	1377
Cable, H-B 3M Rad. 1-13.5GHz	Hol-B 3-m rad cable-01-1GHz-13.5GHz	10/02/2002	10/02/2004	0
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783
Ant., Horn, Emco 3115	9307-5655	02/26/2003	02/26/2004	2157

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00041

Support Devices:

Function	Manufacturer	Model #	S/N
CD Player	Panasonic	SL-S321C	FA7HF96862

Test Conditions / Notes:

The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer-supplied microphone with headset is connected to the EUT. A cable is connected to the AUX port on the EUT, which is typically used for a second microphone connection. This cable is connected to a CD player used for termination only. Spurious radiated emissions 20 – 2200 MHz. The EUT was verified in multiple orientations to ensure the worst case configuration for RF emissions including orientating the EUT and antenna in an upright position on a PVC pipe. The worst case configuration was tested and recorded. RF emissions were not attenuated in this configuration.

Operating Frequency: 216 MHz
Channels:
Highest Measured Output Power: 15.52 ERP(dBm)= 0.03565 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 28.52 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
216.06	-24.9	Horiz	40.42
1,080.13	-29.50	Vert	45.02
2,016.22	-29.50	Horiz	45.02
1,944.23	-31.10	Horiz	46.62
2,160.26	-31.30	Vert	46.82
648.07	-31.50	Horiz	47.02
1,080.13	-31.70	Horiz	47.22
720.07	-31.90	Horiz	47.42
2,088.24	-32.50	Vert	48.02
792.09	-32.50	Vert	48.02
432.05	-32.50	Horiz	48.02
1,296.14	-33.00	Vert	48.52
1,512.19	-33.30	Horiz	48.82
1,512.18	-33.40	Vert	48.92
2,016.22	-33.50	Vert	49.02
864.09	-33.60	Vert	49.12
1,944.23	-34.10	Vert	49.62
1,368.17	-34.20	Vert	49.72
1,368.18	-34.40	Horiz	49.92
1,440.16	-34.60	Vert	50.12
1,728.17	-34.80	Vert	50.32
720.07	-34.90	Vert	50.42
936.10	-35.00	Vert	50.52
1,872.18	-35.10	Horiz	50.62
1,440.15	-35.20	Horiz	50.72
1,728.17	-35.50	Horiz	51.02
1,584.18	-35.60	Horiz	51.12
864.10	-36.60	Horiz	52.12
648.07	-37.00	Vert	52.52
792.09	-37.10	Horiz	52.62
216.94	-20.70	Horiz	36.22
795.56	-28.60	Vert	44.12
433.94	-30.20	Horiz	45.72
1,301.84	-30.40	Vert	45.92
2,025.13	-30.50	Horiz	46.02
1,084.89	-30.90	Vert	46.42
1,951.79	-31.10	Vert	46.62
2,097.41	-31.70	Vert	47.22
2,097.43	-31.90	Horiz	47.42
1,880.48	-32.40	Horiz	47.92

1,951.73	-32.50	Horiz	48.02
723.24	-32.60	Horiz	48.12
1,374.16	-32.90	Vert	48.42
1,084.87	-33.40	Horiz	48.92
650.92	-34.20	Horiz	49.72
1,374.19	-34.30	Horiz	49.82
216.94	-34.50	Vert	50.02
1,446.51	-34.70	Horiz	50.22
867.90	-35.00	Vert	50.52
2,025.11	-35.10	Vert	50.62
1,446.47	-36.10	Vert	51.62
1,591.18	-36.20	Vert	51.72
1,808.15	-36.40	Vert	51.92
867.89	-36.50	Horiz	52.02
217.01	-36.50	Vert	52.02
1,663.46	-36.70	Vert	52.22
650.91	-36.70	Vert	52.22
1,735.82	-36.90	Vert	52.42
1,591.18	-37.00	Horiz	52.52
1,012.56	-37.30	Horiz	52.82
1,229.53	-37.70	Vert	53.22
1,229.52	-38.00	Horiz	53.52
144.64	-47.00	Horiz	62.52
241.08	-48.10	Horiz	63.62
433.94	-48.50	Vert	64.02
241.07	-53.10	Vert	68.62
144.64	-56.70	Vert	72.22

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Back View

FCC 2.1033(c)(14)/2.1055/95.629- FREQUENCY STABILITY

Operating Voltage: 3.0 **VDC/VAC**
Frequency Limit: 50 **PPM/%**

Temperature Variations

Channel Frequency:		**Channel 1 (MHz)** **216.025**	**Dev. (MHz)**
Temp (C)	Voltage		
-30	3.0	216.0295	0.00450
-20	3.0	216.02930	0.00430
-10	3.0	216.02890	0.00390
0	3.0	216.02828	0.00328
10	3.0	216.02735	0.00235
20	3.0	216.02553	0.00053
30	3.0	216.02523	0.00023
40	3.0	216.02333	0.00167
50	3.0	216.02185	0.00315

Voltage Variations (±15%)

20	2.1	216.02553	0.00053
20	2.6	216.02553	0.00053
20	3.0	216.02553	0.00053
20	3.5	216.02553	0.00053

Max Deviation (MHz)	**0.00450**
Max Deviation (PPM)	**20.83092**
	PASS

Test Equipment

Description	*Asset #*	*Manufacturer*	*Model #*	*Serial #*	*Cal Date*	*Cal Due*
Digital Multimeter	01241	Radio Shack	22-183	NA	NR	NR
Spectrum Analyzer 100Hz - 22.5GHz	00490	HP	8566B	2209A01404	2/2620/03	2/26/2004
Spectrum Analyzer Display	00489	HP	8566B	2403A08241	2/26/2003	2/26/2004

NR = Not Requires

Temperature Setup

RSS 210 - FIELD STRENGTH OF SPURIOUS RADIATION

Bandwidth settings used: RBW=100kHz, VBW=100kHz.

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Ant., Bilog, Chase CBL6111C	2630	10/04/2002	10/04/2004	852
QP Adapter HP-85650A	2043A00188	10/08/2002	10/08/2004	1508
Cable, H-B 3M Rad., .01-1000MHz	rad_cab_3M_03_hol-b.01-1000MHz	08/04/2003	08/04/2005	0
S.A., Display HP-85662A	2542A10641	03/11/2003	03/11/2004	1377
S.A., RF Section HP-8568B	2601A02378	03/11/2003	03/11/2004	1377
Cable, H-B 3M Rad. 1-13.5GHz	Hol-B 3-m rad cable-01-1GHz-13.5GHz	10/02/2002	10/02/2004	0
S.A., HP-8596E	3346A00225	06/24/2002	06/24/2004	783
Ant., Horn, Emco 3115	9307-5655	02/26/2003	02/26/2004	2157

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Body Worn Transmitter*	Phonic Ear, Inc.	Easy Listener-2 330-216MHz	FCC 04 00041

Support Devices:

Function	Manufacturer	Model #	S/N
CD Player	Panasonic	SL-S321C	FA7HF96862

Test Conditions / Notes:

The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer-supplied microphone with headset is connected to the EUT. A cable is connected to the AUX port on the EUT, which is typically used for a second microphone connection. This cable is connected to a CD player used for termination only. Spurious radiated emissions 20 – 2200 MHz. The EUT was verified in multiple orientations to ensure the worst case configuration for RF emissions including orientating the EUT and antenna in an upright position on a PVC pipe. The worst case configuration was tested and recorded. RF emissions were not attenuated in this configuration.

Operating Frequency: 216 MHz
Channels:
Highest Measured Output Power: 15.52 ERP(dBm)= 0.03565 ERP(Watts)
Distance: 3 meters
Limit: 55+10Log(P) 28.52 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,080.13	-17.50059534	Vert	33.02
1,944.23	-19.10	Horiz	34.62
2,160.26	-19.30	Vert	34.82
648.07	-19.50	Horiz	35.02
1,080.13	-19.70	Horiz	35.22
720.07	-19.90	Horiz	35.42
2,088.24	-20.50	Vert	36.02
792.09	-20.50	Vert	36.02
432.05	-20.50	Horiz	36.02
1,296.14	-21.10	Vert	36.62
1,512.19	-21.30	Horiz	36.82
1,512.18	-21.40	Vert	36.92
2,016.22	-21.50	Vert	37.02
864.09	-21.60	Vert	37.12
1,944.23	-22.10	Vert	37.62
1,368.17	-22.30	Vert	37.82
1,368.18	-22.40	Horiz	37.92
1,440.16	-22.60	Vert	38.12
1,728.17	-22.80	Vert	38.32
720.07	-22.90	Vert	38.42
936.10	-23.00	Vert	38.52
1,872.18	-23.10	Horiz	38.62
1,440.15	-23.20	Horiz	38.72
1,728.17	-23.50	Horiz	39.02
1,584.18	-23.60	Horiz	39.12
864.10	-24.60	Horiz	40.12
216.06	-24.90	Horiz	40.42
648.07	-25.00	Vert	40.52
792.09	-25.10	Horiz	40.62
936.13	-26.50	Horiz	42.02
1,224.15	-26.60	Vert	42.12
1,008.11	-27.10	Horiz	42.62
1,296.02	-27.40	Horiz	42.92
1,224.14	-27.60	Horiz	43.12
215.99	-27.80	Horiz	43.32
432.05	-32.60	Vert	48.12
205.32	-35.30	Horiz	50.82

144.00	-35.30	Horiz	50.82
680.33	-37.50	Horiz	53.02
680.31	-38.40	Vert	53.92
192.02	-38.50	Horiz	54.02
795.56	-16.60	Vert	32.12
217.01	-16.80	Horiz	32.32
433.94	-18.20	Horiz	33.72
1,301.84	-18.40	Vert	33.92
2,025.13	-18.50	Horiz	34.02
1,084.89	-18.90	Vert	34.42
1,951.79	-19.10	Vert	34.62
2,097.41	-19.70	Vert	35.22
2,097.43	-19.90	Horiz	35.42
1,880.48	-20.40	Horiz	35.92
1,951.73	-20.50	Horiz	36.02
723.24	-20.60	Horiz	36.12
216.94	-20.70	Horiz	36.22
1,374.16	-20.90	Vert	36.42
1,084.87	-21.40	Horiz	36.92
650.92	-22.20	Horiz	37.72
1,374.19	-22.30	Horiz	37.82
1,446.51	-22.70	Horiz	38.22
867.90	-23.00	Vert	38.52
2,025.11	-23.10	Vert	38.62
1,446.47	-24.10	Vert	39.62
1,591.18	-24.20	Vert	39.72
1,808.15	-24.40	Vert	39.92
867.89	-24.50	Horiz	40.02
1,663.46	-24.70	Vert	40.22
650.91	-24.70	Vert	40.22
1,735.82	-24.90	Vert	40.42
1,591.18	-25.00	Horiz	40.52
1,012.56	-25.30	Horiz	40.82
1,229.53	-25.70	Vert	41.22
1,229.52	-26.00	Horiz	41.52
216.94	-34.50	Vert	50.02
144.64	-35.00	Horiz	50.52
241.08	-36.10	Horiz	51.62
217.01	-36.50	Vert	52.02
433.94	-36.50	Vert	52.02
241.07	-41.10	Vert	56.62
144.64	-44.70	Vert	60.22

PHOTOGRAPH SHOWING RADIATED EMISSIONS

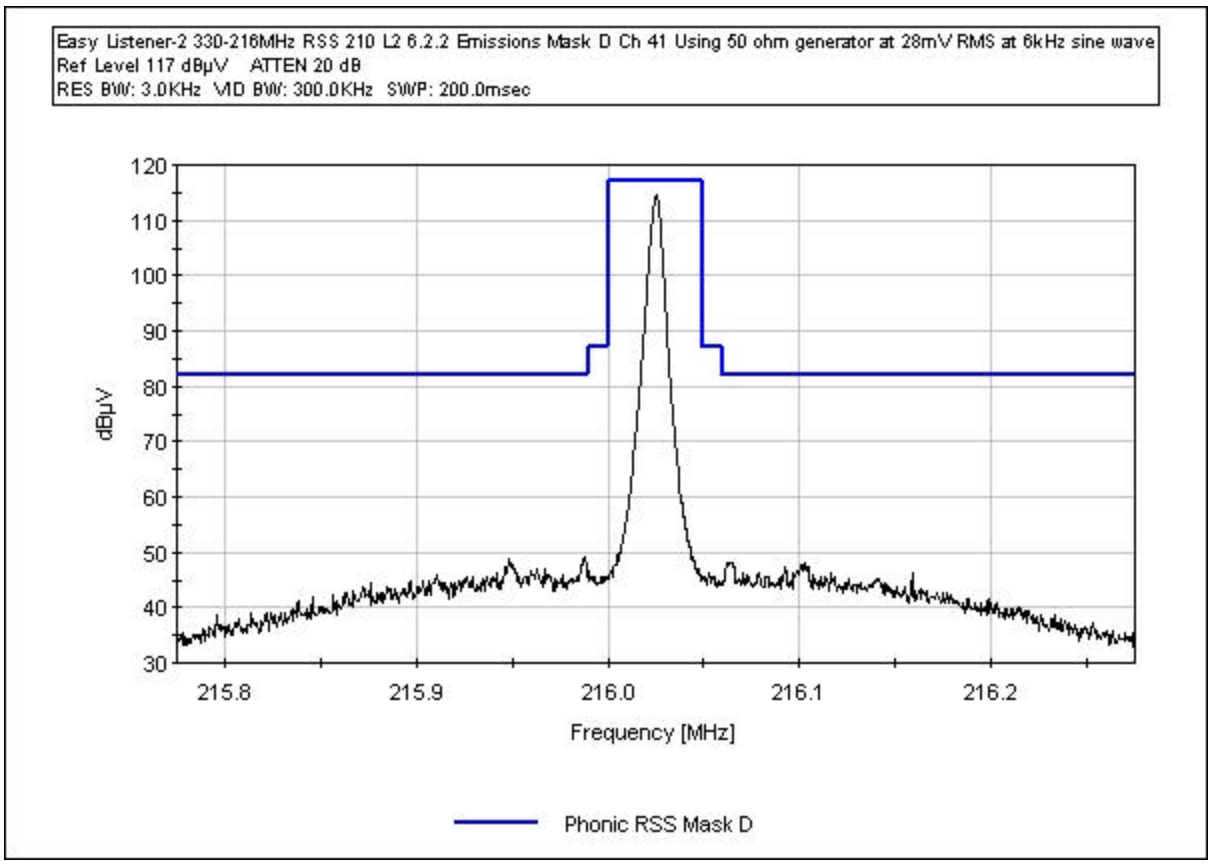
Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

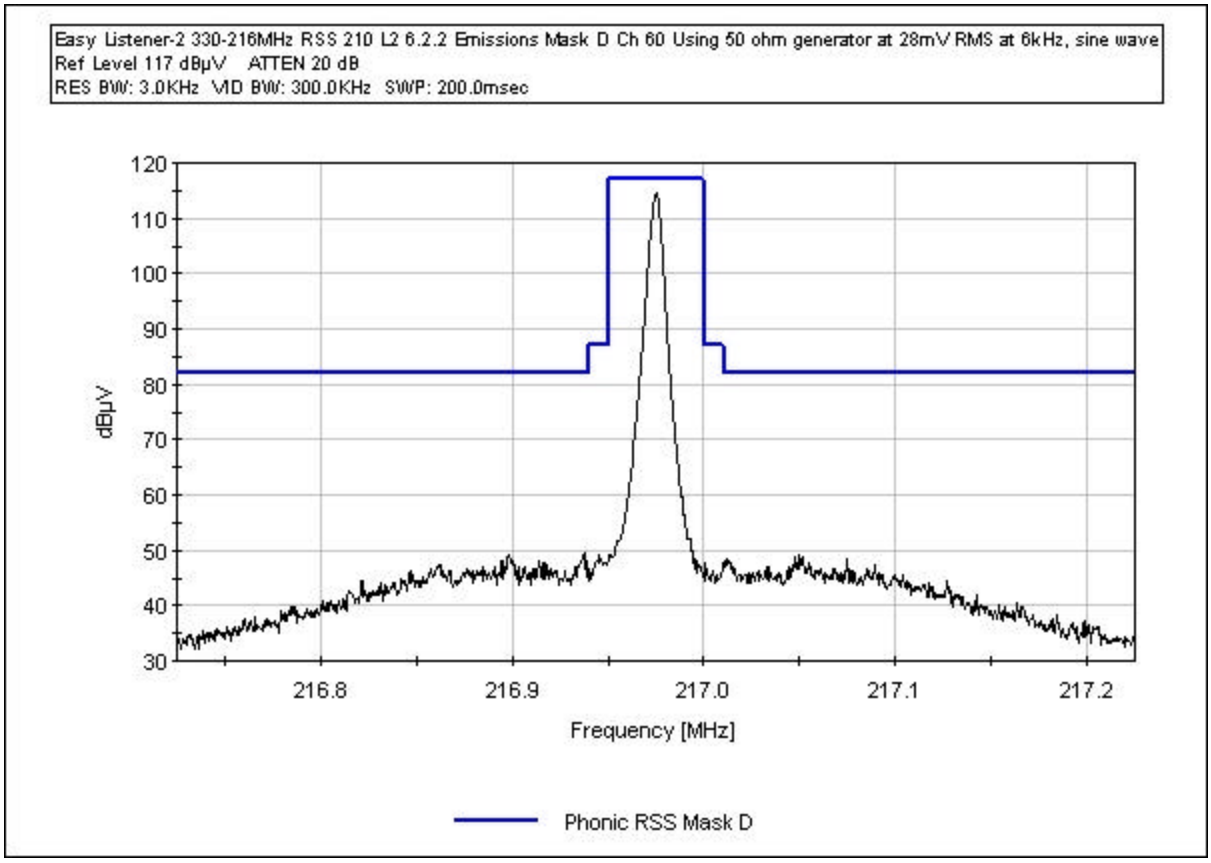
Radiated Emissions - Back View

RSS 210 6.2.2 Emissions Mask D Channel 41

Test Conditions: The EUT is a body worn, transmit only device that operates on the extra channel bands for Part 95. The EUT operates in the frequency range from 216.025 MHz - 216.975 MHz. The EUT operates in continuous mode only, and is FM modulated and transmits only analog data on the carrier. A manufacturer supplied test board is connected to the microphone port of the EUT. The RF out connector on the test fixture is connected to the spectrum analyzer.



RSS 210 L2 6.2.2 EMISSIONS MASK D CHANNEL 60



***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., HP-8596E	3346A00209	01/19/2003	01/19/2004	784
Signal Generator, HP 8656A	2409A6553	01/30/2003	10/30/2004	00508

Direct Connect