



TESTING

CERT #803.01, 803.02, 803.05, 803.06

CADWELL INDUSTRIES, INC. TEST REPORT

FOR THE

**ELECTRONEURODIAGNOSTIC MONITORING SYSTEM,
EASY WIRELESS EEG**

FCC PART 15 SUBPART B SECTIONS 15.107 AND 15.109 CLASS A

TESTING

DATE OF ISSUE: MAY 26, 2009

PREPARED FOR:

Cadwell Industries, Inc.
909 N. Kellogg St.
Kennewick, WA 99336

P.O. No.: 15409
W.O. No.: 89236

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: March 16, 2009

Report No.: FC09-080

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ADMINISTRATIVE INFORMATION

DATE OF TEST: March 16, 2009

DATE OF RECEIPT: March 16, 2009

REPRESENTATIVE: Chris Bolkan

MANUFACTURER:
Cadwell Industries, Inc.
909 N. Kellogg St.
Kennewick, WA 99336

TEST LOCATION:
CKC Laboratories, Inc.
22116 23rd Drive S.E., Suite A
Bothell, WA 98021-4413

TEST METHOD: ANSI C63.4 (2003)

PURPOSE OF TEST: To perform testing of the Electroneurodiagnostic Monitoring System, Easy Wireless EEG with the requirements for FCC Part 15 Subpart B Sections 15.107 and 15.109 Class A devices.

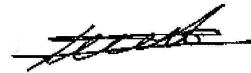
APPROVALS

QUALITY ASSURANCE:

A handwritten signature in black ink, appearing to read "Steve Behm".

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

A handwritten signature in black ink, appearing to read "Armando Del Angel".

Armando Del Angel, Test Engineer

A handwritten signature in black ink, appearing to read "Donald Jones".

Donald Jones, Senior EMC Engineer / Lab
Manager

SITE FILE REGISTRATION NUMBERS

Location	Japan	Canada	FCC
Bothell	R-2296, C-2506 & T-1489	3082C-1	318736

SUMMARY OF RESULTS

Test	Specification	Results
Conducted Emissions	FCC Part 15 Subpart B Section 15.107 Class A	Pass
Radiated Emissions	FCC Part 15 Subpart B Section 15.109 Class A	Pass

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

Electroneurodiagnostic Monitoring System

Manuf: Cadwell Industries, Inc.

Model: Easy Wireless EEG

Serial: ENG001

Electroneurodiagnostic Monitoring System is comprised of the following items:

Easy Net 32Channel Amp

Manuf: Cadwell Industries, Inc.

Model: 32 Channel EEG Easynet amp

Serial: ENG1

Easy Wireless Recorder

Manuf: Cadwell Industries, Inc.

Model: Easy Wireless s

Serial: ENG001

Easy Net Microphone

Manuf: Cadwell Industries, Inc.

Model: NA

Serial: NA

Power/Com Module

Manuf: Cadwell Industries, Inc.

Model: Easy III power/com module

Serial: 0709PX51-00-001

Battery 3.3VDC

Manuf: Cadwell Industries, Inc.

Model: AVT-900689

Serial: 349000-200

MEASUREMENT UNCERTAINTIES

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in $\text{dB}\mu\text{V}/\text{m}$, the spectrum analyzer reading in $\text{dB}\mu\text{V}$ was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

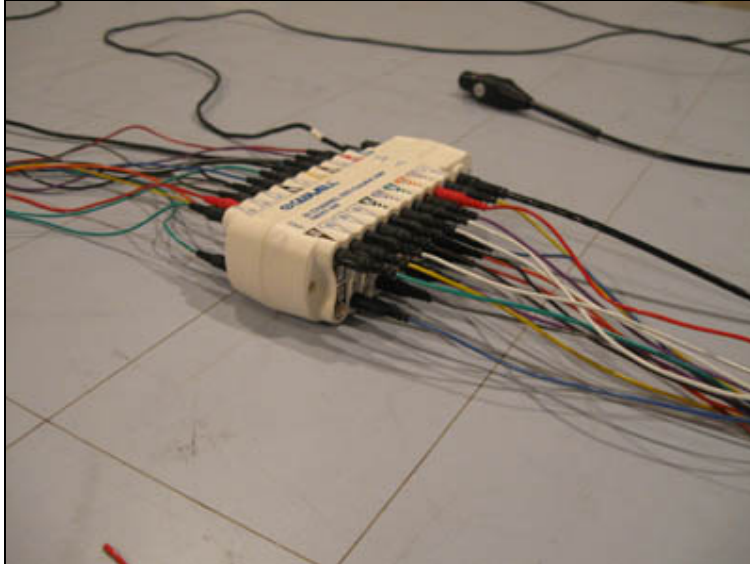
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

CONDUCTED EMISSIONS

Test Setup Photos





Test Data Sheets

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Cadwell Industries**
 Specification: **FCC 15.107(b) Class A - AVE**
 Work Order #: **89236**
 Test Type: **Conducted Emissions**
 Equipment: **Electroneurodiagnostic monitoring system**
 Manufacturer: Cadwell
 Model: Easy Wireless EEG
 S/N: ENG001

Date: 3/16/2009
 Time: 3:33:13 PM
 Sequence#: 6
 Tested By: Armando Del Angel
 110V 60Hz

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4440A	MY46186330	01/31/2008	01/31/2010	AN02872
Cable 30'	11	11/05/2008	11/05/2010	ANP05366
Cable 6'	49	11/10/2008	11/10/2010	ANP05371
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/01/2007	06/01/2009	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Easy Net 32ch Amp	Cadwell	32 Channel EEG Easynet amp	ENG1
Easy Wireless recorder	Cadwell	Easy Wireless s	ENG001
Electroneurodiagnostic monitoring system*	Cadwell	Easy Wireless EEG	ENG001
Easy Net Microphone	Cadwell	N/A	N/A
Power/Com Module	Cadwell	Easy III power/com module	0709PX51-00-001
Battery 3.3Vdc	Cadwell	AVT-900689	349000-200

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temp: = 23°C
 Rel. Humidity = 26%
 Atm. Pressure = 101.9kPa

Testing Conducted Emissions per FCC 15.107 Class A

EUT's are located in the Test table.
 They are connected in the following order:
 Power/Com Module - Easy Wireless recorder (with battery) - Easy net 32ch amp - Easy net microphone
 The power is 230/50 VAC
 And the Power/Com module is also connected to a support computer in the outside of the chamber.
 EUT is in operational mode.

Transducer Legend:

T1=CAB-ANP05371	T2=FIL-AN02611-072108
T3=CAB-ANP05366	T4=ATT-ANP5503-032108
T5=CAB-ANP05360	T6=CDN-AN01492-060107 - Line

Measurement Data:

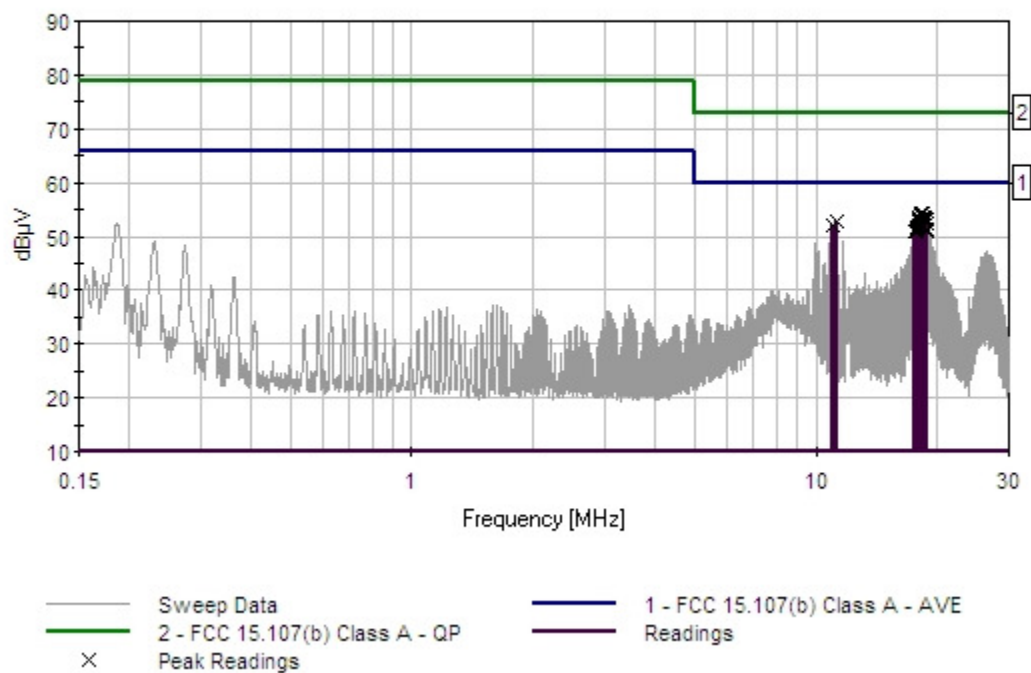
Reading listed by margin.

Test Lead: Line

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	18.274M	42.3	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	54.4	60.0	-5.6	Line
2	18.184M	42.1	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	54.2	60.0	-5.8	Line
3	18.319M	42.1	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	54.2	60.0	-5.8	Line
4	18.139M	41.9	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	54.0	60.0	-6.0	Line
5	18.229M	41.9	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	54.0	60.0	-6.0	Line
6	18.094M	41.8	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.9	60.0	-6.1	Line
7	18.409M	41.6	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.7	60.0	-6.3	Line
8	18.454M	41.6	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.7	60.0	-6.3	Line
9	18.589M	41.7	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.7	60.0	-6.3	Line
10	18.049M	41.5	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.6	60.0	-6.4	Line
11	18.364M	41.5	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.6	60.0	-6.4	Line
12	18.544M	41.6	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.6	60.0	-6.4	Line
13	18.004M	41.2	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	53.3	60.0	-6.7	Line
14	18.634M	41.2	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.2	60.0	-6.8	Line
15	18.499M	41.0	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.0	60.0	-7.0	Line
16	18.679M	41.0	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.0	60.0	-7.0	Line
17	18.725M	41.0	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	53.0	60.0	-7.0	Line
18	11.247M	41.9	+0.1 +0.2	+0.1 +0.4	+0.2	+10.0	+0.0	52.9	60.0	-7.1	Line
19	17.959M	40.8	+0.2 +0.3	+0.2 +1.0	+0.3	+10.1	+0.0	52.9	60.0	-7.1	Line
20	18.815M	40.6	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	52.6	60.0	-7.4	Line

21	18.770M	40.3	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	52.3	60.0	-7.7	Line
22	11.067M	41.1	+0.1 +0.2	+0.1 +0.4	+0.2	+10.0	+0.0	52.1	60.0	-7.9	Line
23	17.869M	39.9	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	51.9	60.0	-8.1	Line
24	17.914M	39.8	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	51.8	60.0	-8.2	Line
25	17.779M	39.6	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	51.6	60.0	-8.4	Line
26	18.860M	39.4	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	51.4	60.0	-8.6	Line
27	17.734M	39.3	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	51.3	60.0	-8.7	Line
28	17.824M	39.1	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	51.1	60.0	-8.9	Line
29	18.905M	39.0	+0.2 +0.3	+0.1 +1.0	+0.3	+10.1	+0.0	51.0	60.0	-9.0	Line
30	17.643M	38.8	+0.2 +0.3	+0.2 +0.9	+0.3	+10.1	+0.0	50.8	60.0	-9.2	Line

CKC Laboratories Date: 3/16/2009 Time: 3:33:13 PM Cadwell Industries WO#: 89236
FCC 15.107(b) Class A - AVE Test Lead: Line 110V 60Hz Sequence#: 6 Polarity: Line
Notes:



Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Cadwell Industries**

Specification: **FCC 15.107(b) Class A - AVE**

Work Order #: **89236**

Date: 3/16/2009

Test Type: **Conducted Emissions**

Time: 3:26:34 PM

Equipment: **Electroneurodiagnostic monitoring system**

Sequence#: 5

Manufacturer: Cadwell

Tested By: Armando Del Angel

Model: Easy Wireless EEG

110V 60Hz

S/N: ENG001

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4440A	MY46186330	01/31/2008	01/31/2010	AN02872
Cable 30'	11	11/05/2008	11/05/2010	ANP05366
Cable 6'	49	11/10/2008	11/10/2010	ANP05371
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/01/2007	06/01/2009	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Easy Net 32ch Amp	Cadwell	32 Channel EEG Easynet amp	ENG1
Easy Wireless recorder	Cadwell	Easy Wireless s	ENG001
Electroneurodiagnostic monitoring system*	Cadwell	Easy Wireless EEG	ENG001
Easy Net Microphone	Cadwell	N/A	N/A
Power/Com Module	Cadwell	Easy III power/com module	0709PX51-00-001
Battery 3.3Vdc	Cadwell	AVT-900689	349000-200

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temp: = 23°C

Rel. Humidity = 26%

Atm. Pressure = 101.9kPa

Testing Conducted Emissions per FCC 15.107 Class A

EUT's are located in the Test table.

They are connected in the following order:

Power/Com Module - Easy Wireless recorder (with battery) - Easy net 32ch amp - Easy net microphone

The power is 230/50 VAC

And the Power/Com module is also connected to a support computer in the outside of the chamber.

EUT is in operational mode.

Transducer Legend:

T1=CAB-ANP05371	T2=FIL-AN02611-072108
T3=CAB-ANP05366	T4=ATT-ANP5503-032108
T5=CAB-ANP05360	T6=CDN-AN01492-060107 - Neutral

Measurement Data:

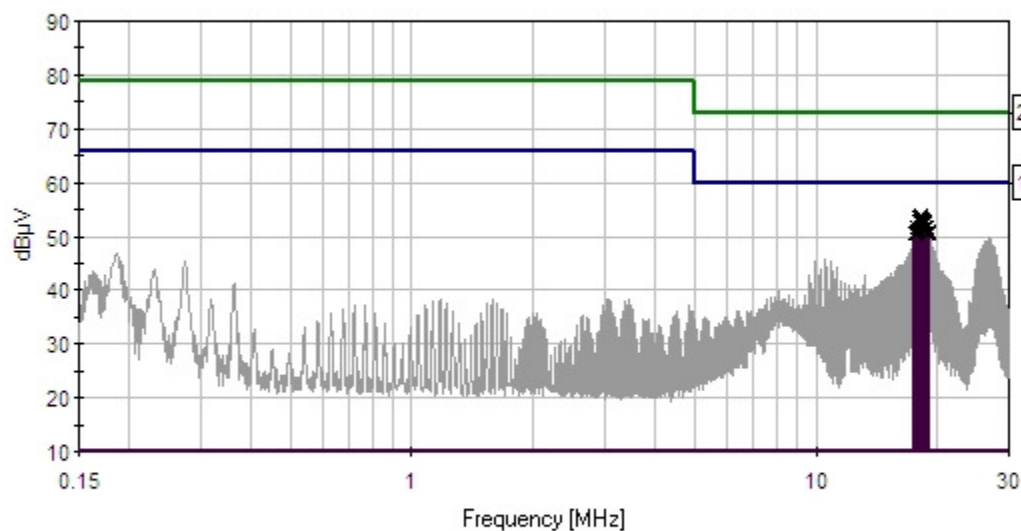
Reading listed by margin.

Test Lead: Neutral

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	18.265M	41.6	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.8	60.0	-6.2	Neutr
2	18.184M	41.5	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.7	60.0	-6.3	Neutr
3	18.040M	41.3	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.5	60.0	-6.5	Neutr
4	18.085M	41.2	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.4	60.0	-6.6	Neutr
5	18.310M	41.0	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.2	60.0	-6.8	Neutr
6	18.220M	40.9	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	53.1	60.0	-6.9	Neutr
7	18.355M	40.7	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.9	60.0	-7.1	Neutr
8	18.499M	40.8	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	52.9	60.0	-7.1	Neutr
9	18.535M	40.8	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	52.9	60.0	-7.1	Neutr
10	17.995M	40.6	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.8	60.0	-7.2	Neutr
11	17.950M	40.5	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.7	60.0	-7.3	Neutr
12	18.130M	40.5	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.7	60.0	-7.3	Neutr
13	18.580M	40.5	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	52.6	60.0	-7.4	Neutr
14	18.625M	40.2	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	52.3	60.0	-7.7	Neutr
15	18.445M	40.0	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.2	60.0	-7.8	Neutr
16	18.400M	39.9	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	52.1	60.0	-7.9	Neutr
17	18.670M	39.7	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	51.8	60.0	-8.2	Neutr
18	18.716M	39.7	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	51.8	60.0	-8.2	Neutr
19	17.725M	39.4	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	51.6	60.0	-8.4	Neutr
20	17.770M	39.3	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	51.5	60.0	-8.5	Neutr

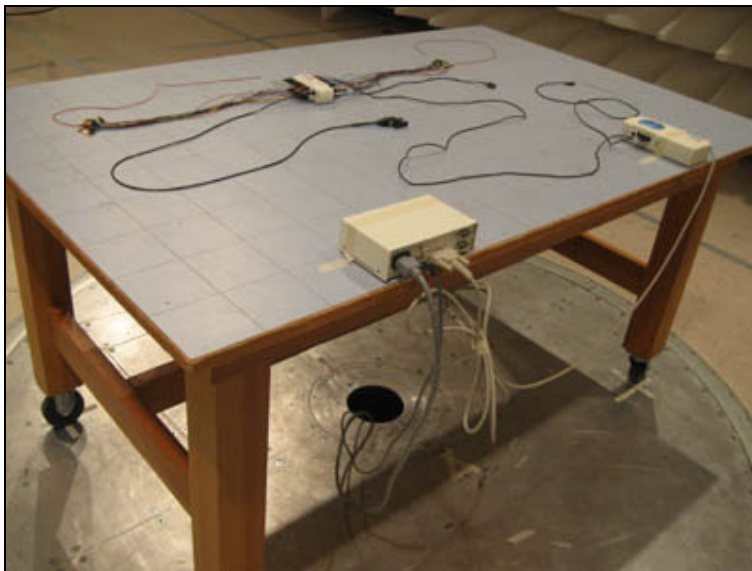
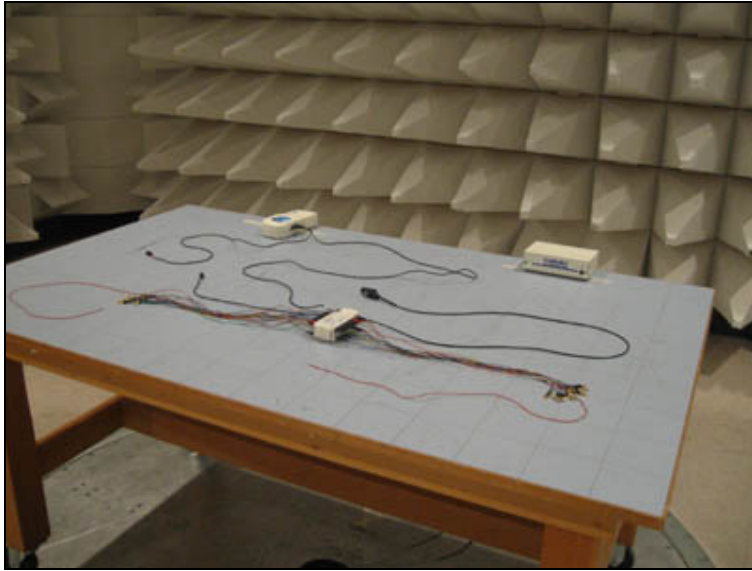
21	18.770M	39.4	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	51.5	60.0	-8.5	Neutr
22	17.860M	38.8	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	51.0	60.0	-9.0	Neutr
23	17.905M	38.8	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	51.0	60.0	-9.0	Neutr
24	19.085M	38.8	+0.2 +0.3	+0.1 +1.2	+0.3	+10.1	+0.0	51.0	60.0	-9.0	Neutr
25	17.679M	38.7	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	50.9	60.0	-9.1	Neutr
26	17.634M	38.5	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	50.7	60.0	-9.3	Neutr
27	18.806M	38.6	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	50.7	60.0	-9.3	Neutr
28	18.851M	38.6	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	50.7	60.0	-9.3	Neutr
29	18.950M	38.6	+0.2 +0.3	+0.1 +1.1	+0.3	+10.1	+0.0	50.7	60.0	-9.3	Neutr
30	17.815M	38.3	+0.2 +0.3	+0.2 +1.1	+0.3	+10.1	+0.0	50.5	60.0	-9.5	Neutr

CKC Laboratories Date: 3/16/2009 Time: 3:26:34 PM Cadwell Industries WO#: 89236
FCC 15.107(b) Class A - AVE Test Lead: Neutral 110V 60Hz Sequence#: 5 Polarity: Neutral
Notes:



RADIATED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Cadwell Industries**

Specification: **15.109 CLASS A**

Work Order #: **89236**

Date: 3/16/2009

Test Type: **Radiated Scan**

Time: 14:25:27

Equipment: **Electroneurodiagnostic monitoring system**

Sequence#: 1

Manufacturer: Cadwell

Tested By: Armando Del Angel

Model: Easy Wireless EEG

S/N: ENG001

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8447D Preamp	2944A08601	07/08/2008	07/08/2010	AN01517
Agilent E4440A	MY46186330	01/31/2008	01/31/2010	AN02872
Cable 6'	51	12/30/2008	12/30/2010	ANP05361
Antenna	2453	12/22/2008	12/22/2010	AN01994
Cable 30'	11	11/05/2008	11/05/2010	ANP05366
Cable 6'	49	11/10/2008	11/10/2010	ANP05371
Cable 20'	16	11/10/2008	11/10/2010	ANP05360

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Easy Net 32ch Amp	Cadwell	32 Channel EEG Easynet amp	ENG1
Easy Wireless recorder	Cadwell	Easy Wireless s	ENG001
Electroneurodiagnostic monitoring system*	Cadwell	Easy Wireless EEG	ENG001
Easy Net Microphone	Cadwell	N/A	N/A
Power/Com Module	Cadwell	Easy III power/com module	0709PX51-00-001
Battery 3.3Vdc	Cadwell	AVT-900689	349000-200

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temp: = 23°C

Rel. Humidity = 26%

Atm. Pressure = 101.9kPa

Testing Radiated Emissions per FCC 15.109 A

EUT's are located in the Test table.

They are connected in the following order:

Power/Com Module - Easy Wireless recorder (with battery) - Easy net 32ch amp - Easy net microphone

The power is 230/50 VAC

And the Power/Com module is also connected to a support computer in the outside of the chamber.

EUT is in operational mode.

Transducer Legend:

T1=AMP-AN01517-070808	T2=ANT AN01994 25-1000MHz
T3=CAB-ANP05360	T4=CAB-ANP05361
T5=CAB-ANP05366	T6=CAB-ANP05371

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	31.967M	45.1	-29.2	+19.8	+0.3	+0.1	-10.0	26.6	39.1	-12.5	Vert
	QP		+0.3	+0.2			180				117
^	31.967M	52.6	-29.2	+19.8	+0.3	+0.1	-10.0	34.1	39.1	-5.0	Vert
			+0.3	+0.2			180				117
3	67.800M	57.8	-29.2	+6.0	+0.5	+0.1	-10.0	25.9	39.1	-13.2	Vert
			+0.5	+0.2			360				130
4	67.001M	57.9	-29.2	+5.9	+0.4	+0.1	-10.0	25.6	39.1	-13.5	Vert
			+0.4	+0.1			360				130
5	68.665M	56.6	-29.2	+6.2	+0.5	+0.1	-10.0	24.9	39.1	-14.2	Vert
			+0.5	+0.2			360				130
6	39.982M	47.7	-29.1	+15.1	+0.4	+0.1	-10.0	24.7	39.1	-14.4	Vert
			+0.4	+0.1			360				130
7	66.136M	56.3	-29.2	+5.7	+0.4	+0.1	-10.0	23.8	39.1	-15.3	Vert
			+0.4	+0.1			360				130
8	199.852M	55.2	-28.8	+9.1	+0.9	+0.2	-10.0	27.9	43.5	-15.6	Vert
			+1.0	+0.3			360				130
9	215.948M	53.4	-28.7	+10.3	+0.9	+0.2	-10.0	27.4	43.5	-16.1	Vert
			+1.0	+0.3			360				130
10	123.936M	52.7	-29.0	+11.7	+0.7	+0.2	-10.0	27.3	43.5	-16.2	Vert
			+0.7	+0.3			360				130
11	211.864M	53.3	-28.7	+10.0	+0.9	+0.2	-10.0	27.0	43.5	-16.5	Vert
			+1.0	+0.3			360				130
12	69.530M	54.1	-29.2	+6.3	+0.5	+0.1	-10.0	22.5	39.1	-16.6	Vert
			+0.5	+0.2			360				130
13	203.936M	53.9	-28.8	+9.4	+0.9	+0.2	-10.0	26.9	43.5	-16.6	Vert
			+1.0	+0.3			360				130
14	116.008M	52.7	-29.0	+11.4	+0.6	+0.2	-10.0	26.8	43.5	-16.7	Vert
			+0.6	+0.3			360				130
15	208.020M	53.3	-28.7	+9.7	+0.9	+0.2	-10.0	26.7	43.5	-16.8	Vert
			+1.0	+0.3			360				130
16	64.472M	54.9	-29.2	+5.4	+0.4	+0.1	-10.0	22.1	39.1	-17.0	Vert
			+0.4	+0.1			360				130
17	83.971M	51.8	-29.1	+8.0	+0.5	+0.1	-10.0	22.0	39.1	-17.1	Vert
			+0.5	+0.2			360				130
18	131.984M	51.5	-29.0	+11.7	+0.7	+0.2	-10.0	26.1	43.5	-17.4	Vert
			+0.7	+0.3			360				130
19	235.888M	53.2	-28.6	+11.8	+1.0	+0.2	-10.0	29.0	46.4	-17.4	Vert
			+1.0	+0.4			360				130
20	35.989M	41.2	-29.1	+18.1	+0.4	+0.1	-10.0	21.2	39.1	-17.9	Vert
			+0.4	+0.1			360				130

21	70.329M	52.5	-29.2 +0.5	+6.4 +0.2	+0.5	+0.1	-10.0 360	21.0	39.1	-18.1	Vert 130
22	71.926M	52.3	-29.2 +0.5	+6.6 +0.2	+0.5	+0.1	-10.0 360	21.0	39.1	-18.1	Vert 130
23	215.588M	51.1	-28.7 +1.0	+10.3 +0.3	+0.9	+0.2	-10.0 360	25.1	43.5	-18.4	Vert 130
24	227.960M QP	52.9	-28.6 +1.0	+11.2 +0.3	+0.9	+0.2	-10.0 90	27.9	46.4	-18.5	Vert 199
^	227.960M	61.6	-28.6 +1.0	+11.2 +0.3	+0.9	+0.2	-10.0 90	36.6	46.4	-9.8	Vert 199
26	183.876M QP	49.8	-28.8 +0.9	+9.0 +0.2	+0.8	+0.2	-10.0 99	22.1	43.5	-21.4	Vert 200
^	183.876M	57.8	-28.8 +0.9	+9.0 +0.2	+0.8	+0.2	-10.0 360	30.1	43.5	-13.4	Vert 130
28	220.393M QP	48.3	-28.6 +1.0	+10.7 +0.3	+0.9	+0.2	-10.0 90	22.8	46.4	-23.6	Vert 199
^	220.393M	56.6	-28.6 +1.0	+10.7 +0.3	+0.9	+0.2	-10.0 360	31.1	46.4	-15.3	Vert 130
30	184.237M QP	47.0	-28.8 +0.9	+9.0 +0.2	+0.8	+0.2	-10.0 180	19.3	43.5	-24.2	Vert 99
^	184.237M	58.0	-28.8 +0.9	+9.0 +0.2	+0.8	+0.2	-10.0 360	30.3	43.5	-13.2	Vert 130
32	168.141M QP	43.4	-28.8 +0.9	+9.9 +0.2	+0.8	+0.2	-10.0 99	16.6	43.5	-26.9	Vert 99
^	168.141M	56.7	-28.8 +0.9	+9.9 +0.2	+0.8	+0.2	-10.0 360	29.9	43.5	-13.6	Vert 130
34	191.944M QP	41.2	-28.8 +1.0	+9.1 +0.3	+0.9	+0.2	-10.0 180	13.9	43.5	-29.6	Vert 99
35	176.088M QP	38.8	-28.8 +0.9	+9.2 +0.2	+0.8	+0.2	-10.0 180	11.3	43.5	-32.2	Vert 99
^	176.088M	56.5	-28.8 +0.9	+9.2 +0.2	+0.8	+0.2	-10.0 360	29.0	43.5	-14.5	Vert 130

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Cadwell Industries**

Specification: **15.109 CLASS A**

Work Order #: **89236**

Date: 3/16/2009

Test Type: **Radiated Scan**

Time: 14:44:11

Equipment: **Electroneurodiagnostic monitoring system**

Sequence#: 2

Manufacturer: Cadwell

Tested By: Armando Del Angel

Model: Easy Wireless EEG

S/N: ENG001

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8447D Preamp	2944A08601	07/08/2008	07/08/2010	AN01517
Agilent E4440A	MY46186330	01/31/2008	01/31/2010	AN02872
Cable 6'	51	12/30/2008	12/30/2010	ANP05361
Antenna	2453	12/22/2008	12/22/2010	AN01994
Cable 30'	11	11/05/2008	11/05/2010	ANP05366
Cable 6'	49	11/10/2008	11/10/2010	ANP05371
Cable 20'	16	11/10/2008	11/10/2010	ANP05360

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Easy Net 32ch Amp	Cadwell	32 Channel EEG Easynet amp	ENG1
Easy Wireless recorder	Cadwell	Easy Wireless s	ENG001
Electroneurodiagnostic monitoring system*	Cadwell	Easy Wireless EEG	ENG001
Easy Net Microphone	Cadwell	N/A	N/A
Power/Com Module	Cadwell	Easy III power/com module	0709PX51-00-001
Battery 3.3Vdc	Cadwell	AVT-900689	349000-200

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temp: = 23°C

Rel. Humidity = 26%

Atm. Pressure = 101.9kPa

Testing Radiated Emissions per EN60601-1-2 2007 Class A

EUT's are located in the Test table.

They are connected in the following order:

Power/Com Module - Easy Wireless recorder (with battery) - Easy net 32ch amp - Easy net microphone

The power is 230/50 VAC

And the Power/Com module is also connected to a support computer in the outside of the chamber.

EUT is in operational mode.

Transducer Legend:

T1=AMP-AN01517-070808	T2=ANT AN01994 25-1000MHz
T3=CAB-ANP05360	T4=CAB-ANP05361
T5=CAB-ANP05366	T6=CAB-ANP05371

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	159.972M	62.5	-28.9 +0.9	+10.7 +0.2	+0.8	+0.2	-10.0 360	36.4	43.5	-7.1	Horiz 130
2	208.621M	62.8	-28.7 +1.0	+9.8 +0.3	+0.9	+0.2	-10.0 360	36.3	43.5	-7.2	Horiz 130
3	214.507M	62.3	-28.7 +1.0	+10.2 +0.3	+0.9	+0.2	-10.0 360	36.2	43.5	-7.3	Horiz 130
4	147.960M	60.3	-28.9 +0.8	+11.4 +0.3	+0.7	+0.2	-10.0 360	34.8	43.5	-8.7	Horiz 130
5	220.001M QP	63.2	-28.6 +1.0	+10.6 +0.3	+0.9	+0.2	-10.0 118	37.6	46.4	-8.8	Horiz 127
^	220.001M	71.3	-28.6 +1.0	+10.6 +0.3	+0.9	+0.2	-10.0 118	45.7	46.4	-0.7	Horiz 127
7	192.044M	62.0	-28.8 +1.0	+9.1 +0.3	+0.9	+0.2	-10.0 360	34.7	43.5	-8.8	Horiz 130
8	168.020M	61.4	-28.8 +0.9	+9.9 +0.2	+0.8	+0.2	-10.0 360	34.6	43.5	-8.9	Horiz 130
9	156.008M	60.4	-28.9 +0.8	+10.9 +0.2	+0.8	+0.2	-10.0 360	34.4	43.5	-9.1	Horiz 130
10	213.666M	60.1	-28.7 +1.0	+10.2 +0.3	+0.9	+0.2	-10.0 360	34.0	43.5	-9.5	Horiz 130
11	228.080M	61.8	-28.6 +1.0	+11.2 +0.3	+0.9	+0.2	-10.0 360	36.8	46.4	-9.6	Horiz 130
12	212.465M	59.8	-28.7 +1.0	+10.1 +0.3	+0.9	+0.2	-10.0 360	33.6	43.5	-9.9	Horiz 130
13	191.804M	60.1	-28.8 +1.0	+9.1 +0.3	+0.9	+0.2	-10.0 360	32.8	43.5	-10.7	Horiz 130
14	196.008M	60.1	-28.8 +1.0	+9.1 +0.3	+0.9	+0.2	-10.0 360	32.8	43.5	-10.7	Horiz 130
15	203.816M	59.8	-28.8 +1.0	+9.4 +0.3	+0.9	+0.2	-10.0 360	32.8	43.5	-10.7	Horiz 130
16	207.540M	59.3	-28.7 +1.0	+9.7 +0.3	+0.9	+0.2	-10.0 360	32.7	43.5	-10.8	Horiz 130
17	210.903M	58.8	-28.7 +1.0	+10.0 +0.3	+0.9	+0.2	-10.0 360	32.5	43.5	-11.0	Horiz 130
18	108.081M	58.9	-29.1 +0.6	+10.8 +0.2	+0.6	+0.1	-10.0 360	32.1	43.5	-11.4	Horiz 130
19	227.480M	59.7	-28.6 +1.0	+11.2 +0.3	+0.9	+0.2	-10.0 360	34.7	46.4	-11.7	Horiz 130
20	216.789M	60.5	-28.7 +1.0	+10.4 +0.3	+0.9	+0.2	-10.0 360	34.6	46.4	-11.8	Horiz 130

21	131.984M	57.0	-29.0 +0.7	+11.7 +0.3	+0.7	+0.2	-10.0 360	31.6	43.5	-11.9	Horiz 130
22	211.984M	57.8	-28.7 +1.0	+10.0 +0.3	+0.9	+0.2	-10.0 360	31.5	43.5	-12.0	Horiz 130
23	168.261M	58.2	-28.8 +0.9	+9.9 +0.2	+0.8	+0.2	-10.0 360	31.4	43.5	-12.1	Horiz 130
24	216.309M	60.1	-28.7 +1.0	+10.4 +0.3	+0.9	+0.2	-10.0 360	34.2	46.4	-12.2	Horiz 130
25	222.915M	58.4	-28.6 +1.0	+10.9 +0.3	+0.9	+0.2	-10.0 360	33.1	46.4	-13.3	Horiz 130
26	224.116M	57.7	-28.6 +1.0	+10.9 +0.3	+0.9	+0.2	-10.0 360	32.4	46.4	-14.0	Horiz 130
27	221.113M	57.1	-28.6 +1.0	+10.7 +0.3	+0.9	+0.2	-10.0 360	31.6	46.4	-14.8	Horiz 130
28	213.306M QP	52.3	-28.7 +1.0	+10.1 +0.3	+0.9	+0.2	-10.0 118	26.1	43.5	-17.4	Horiz 127
^	213.306M	63.6	-28.7 +1.0	+10.1 +0.3	+0.9	+0.2	-10.0 360	37.4	43.5	-6.1	Horiz 130