



NAUTILUS HEALTH & FITNESS GROUP TEST REPORT
FOR THE
FITNESS ADVISOR RESISTANCE TRAINER, NFA-RT-03
FCC PART 15 SUBPART C SECTIONS 15.209/15.249
AND PART 15 SUBPART B SECTION 15.109 CLASS B
COMPLIANCE

DATE OF ISSUE: JANUARY 20, 2003

PREPARED FOR:

Nautilus Health & Fitness Group
1886 Prairie Way
Louisville, CO 80027

P.O. No.: 804637-000
W.O. No.: 79817

PREPARED BY:

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Date of test: January 15, 2003

Report No.: FC03-002

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ADMINISTRATIVE INFORMATION

DATE OF TEST: January 15, 2003

DATE OF RECEIPT: January 15, 2003

PURPOSE OF TEST: To demonstrate the compliance of the Fitness Advisor Resistance Trainer, NFA-RT-03, with the requirements for FCC Part 15 Subpart C Sections 15.209/15.249 and Part 15 Subpart B Section 15.109 Class B devices.

TEST METHOD: ANSI C63.4 (1992)

MANUFACTURER: Nautilus Health & Fitness Group
1886 Prairie Way
Louisville, CO 80027

REPRESENTATIVE: Thomas Schmidt

TEST LOCATION: CKC Laboratories, Inc.
480 Los Viboras Road
Hollister, CA 95023

SUMMARY OF RESULTS

As received, the Nautilus Health & Fitness Group Fitness Advisor Resistance Trainer, NFA-RT-03 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 15 Subpart B Section 15.109
Class B
- FCC Part 15 Subpart C Sections
15.209/15.249
- ANSI C63.4 (1992) method

Canada

RSS-210 using:

- FCC Part 15 Subpart B Section 15.109
Class B
- FCC Part 15 Subpart C Sections
15.209/15.249
- ANSI C63.4 (1992) method

Industry of Canada File No. IC 3171-B

CONDITIONS FOR COMPLIANCE

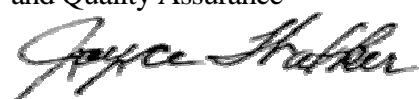
Conducted emissions not required for this device. Added a ferrite (Dexter Magnetics (Fair-Rite) 0444164951) to each of the I/O cables that connect to the range of motion sensors for the 15.109 testing.

APPROVALS

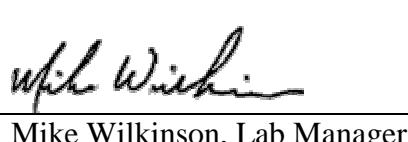
QUALITY ASSURANCE:



Steve Behm, Director of Engineering Services
and Quality Assurance



Joyce Walker, Quality Assurance Administrative
Manager



Mike Wilkinson, Lab Manager

TEST PERSONNEL:



Art Rice, EMC Test Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The Fitness Advisor Resistance Trainer tested by CKC Laboratories was a production unit.

15.31(e) Voltage Variations

Fresh batteries were used for testing, other voltage variations not required for battery powered devices.

15.31(m) Number Of Channels

This device operates on a single channel.

15.33(a) Frequency Ranges Tested

15.109 Radiated Emissions: 30 MHz – 10 GHz

15.209/15.249 Radiated: 30 MHz – 10 GHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	10 GHz	1 MHz

15.203 Antenna Requirements

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

15.205 Restricted Bands

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

Mode Of Operation

The EUT was configured by the manufacturer to operate in a continuous transmit mode for testing purposes.

Eut Operating Frequency

The EUT was operating at 906 MHz in the 902-928 MHz frequency range.

EQUIPMENT UNDER TEST

Fitness Advisor Resistance Trainer

Manuf: Nautilus Health & Fitness Group
Model: NFA-RT-03
Serial: 2000000
FCC ID: QQ9 NFA-RT-03 (pending)

Range of Motion Sensor

Manuf: Nautilus Health & Fitness Group
Model: NFA-SROM-01
Serial: 2000103
FCC ID: DoC

Range of Motion Sensor

Manuf: Nautilus Health & Fitness Group
Model: NFA-SROM-01
Serial: 2000104
FCC ID: Doc

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

MEASUREMENT UNCERTAINTY

TEST	HIGHEST UNCERTAINTY
Radiated Emissions	+/- 2.94 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.

REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the Fitness Advisor Resistance Trainer, NFA-RT-03. All readings taken are peak readings unless otherwise noted. The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: 15.249 Fundamental Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Duty Cycle dB				
906.00	96.4				-20.0	76.8	94.0	-17.2	V
906.00	92.5				-20.0	72.9	94.0	-21.1	V

Test Method: ANSI C63.4 (1992)

NOTES: V = Vertical Polarization

Spec Limit: FCC Part 15 Subpart C Section 15.249

Test Distance: 3 Meters

COMMENTS: The EUT- Wireless Fitness Tracking System is placed at the center rear edge of a wooden test table 80 cm above the ground plane. The EUT is mounted in a typical orientation at a 45 degree angle with the keyboard and display facing up. The Range of Motion Sensors are placed to the right and left sides of the EUT. They are connected to the EUT with 15 foot long RJ-45 cables. The excess length of the cables is bundled to 40 cm above the ground plane. Note 1) The EUT is in the continuous transmitting mode at 906 MHz for this test. The transmitter is sending a packet about every 0.5 seconds. Note 2) The spectrum analyzer has 10 dB attenuation engaged for measurements below 1 GHz. RBW=VBW=100 kHz for fundamental measurement. Note 3) Includes -20 dB duty cycle correction for fundamental and harmonics. Radiated emissions 30 MHz to 10 GHz.

Table 2: 15.249 Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Duty Cycle dB				
72.049	52.5	6.6	-26.5	1.2	0.0	33.8	40.0	-6.2	V
116.088	53.2	11.2	-26.3	1.6	0.0	39.7	43.5	-3.8	VQ
130.069	49.7	11.6	-26.3	1.7	0.0	36.7	43.5	-6.8	V
136.070	53.0	11.5	-26.3	1.8	0.0	40.0	43.5	-3.5	VQ
136.082	52.1	11.5	-26.3	1.8	0.0	39.1	43.5	-4.4	HQ
305.651	52.2	13.2	-25.9	2.8	0.0	42.3	46.0	-3.7	HQ

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Subpart C Section 15.249/15.209
 Test Distance: 3 Meters

NOTES:
 H = Horizontal Polarization
 V = Vertical Polarization
 Q = Quasi Peak Reading

COMMENTS: The EUT- Wireless Fitness Tracking System is placed at the center rear edge of a wooden test table 80 cm above the ground plane. The EUT is mounted in a typical orientation at a 45 degree angle with the keyboard and display facing up. The Range of Motion Sensors are placed to the right and left sides of the EUT. They are connected to the EUT with 15 foot long RJ-45 cables. The excess length of the cables is bundled to 40 cm above the ground plane. Note 1) The EUT is in the continuous transmitting mode at 906 MHz for this test. The transmitter is sending a packet about every 0.5 seconds. Note 2) The spectrum analyzer has 10 dB attenuation engaged for measurements below 1 GHz. RBW=VBW=100 kHz for fundamental measurement. Note 3) Includes -20 dB duty cycle correction for fundamental and harmonics. Radiated emissions 30 MHz to 10 GHz.

Table 3: 15.109 Six Highest Radiated Emission Levels

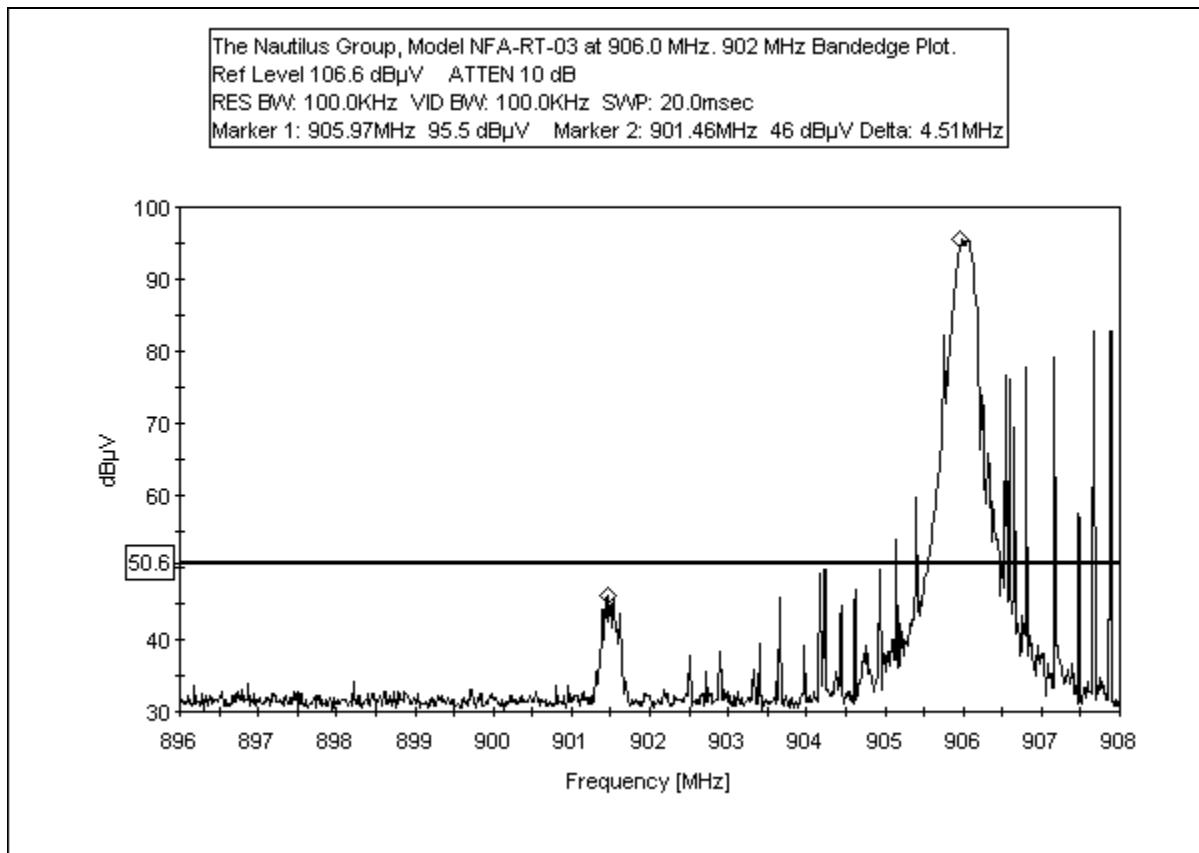
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS			CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB				
70.207	51.9	6.4	-26.5	1.2	33.0	40.0	-7.0	V
130.024	50.6	11.6	-26.3	1.7	37.6	43.5	-5.9	V
305.604	50.8	13.2	-25.9	2.8	40.9	46.0	-5.1	HQ
344.057	47.9	14.2	-26.3	3.0	38.8	46.0	-7.2	H
916.726	39.0	23.0	-27.0	5.0	40.0	46.0	-6.0	H
916.727	38.2	23.0	-27.0	5.0	39.2	46.0	-6.8	V

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Subpart B Section 15.109 Class B
 Test Distance: 3 Meters

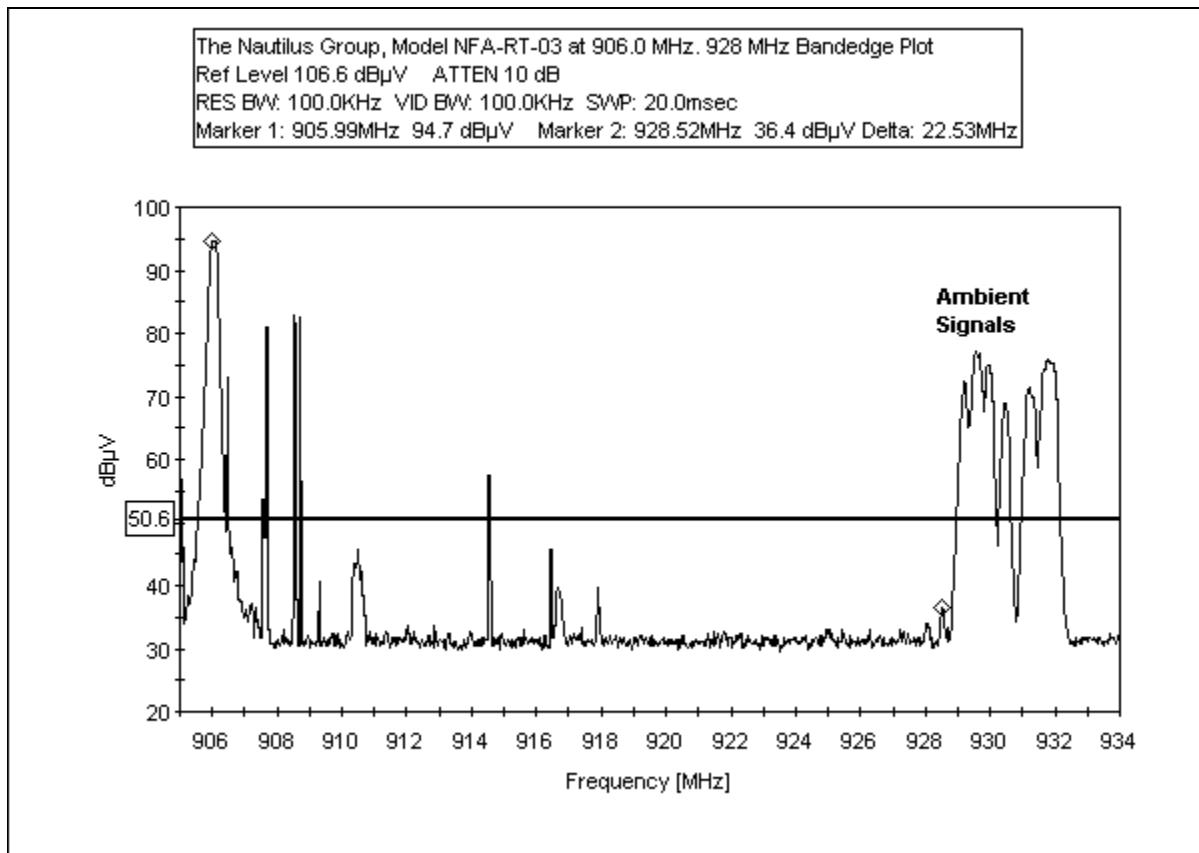
NOTES:
 H = Horizontal Polarization
 V = Vertical Polarization
 Q = Quasi Peak Reading

COMMENTS: The EUT- Wireless Fitness Tracking System is placed at the center rear edge of a wooden test table 80 cm above the ground plane. The EUT is mounted in a typical orientation at a 45 degree angle with the keyboard and display facing up. The Range of Motion Sensors are place to the right and left sides of the EUT. They are connected to the EUT with 15 foot long RJ-45 cables. The excess length of the cables is bundled to 40 cm above the ground plane. Note 1) The EUT is in the continuous receiving mode at 906 MHz for this test. The receive LO is at 916.704 MHz. Note 2) Added a ferrite to each of the I/O cables that connect to the range of motion sensors. Dexter Magnetics (Fair-Rite) 0444164951. The digital circuitry is in the normal operational mode. Radiated emissions 30 MHz to 10 GHz.

FCC Part 15.249(d) BANDEDGE PLOT 902 MHz



BANDEDGE PLOT 928 MHz



TEMPERATURE AND HUMIDITY DURING TESTING

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

EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected. All excessive interconnecting cable was bundled in 30-40 centimeter lengths.

The radiated emissions data of the Fitness Advisor Resistance Trainer, NFA-RT-03, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

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 dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: 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 in Table A were used to collect both the radiated emissions data for the Fitness Advisor Resistance Trainer, NFA-RT-03. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. The antenna was located at a distance of 3 meters from the edge of the EUT.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the 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 six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. 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 or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer 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 HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

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

EUT TESTING

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	V1.00
CRT was displaying:	N/A
Power Supply Manufacturer:	N/A
Power Supply Part Number:	N/A
AC Line Filter Manufacturer:	N/A
AC Line Filter Part Number:	N/A

I/O PORTS	
Type	#
Range of Motion Connector-SPI	2
Test Connector - Serial (Manufacturing tests only)	1
Test Connector - External Power (Manufacturing tests only)	1

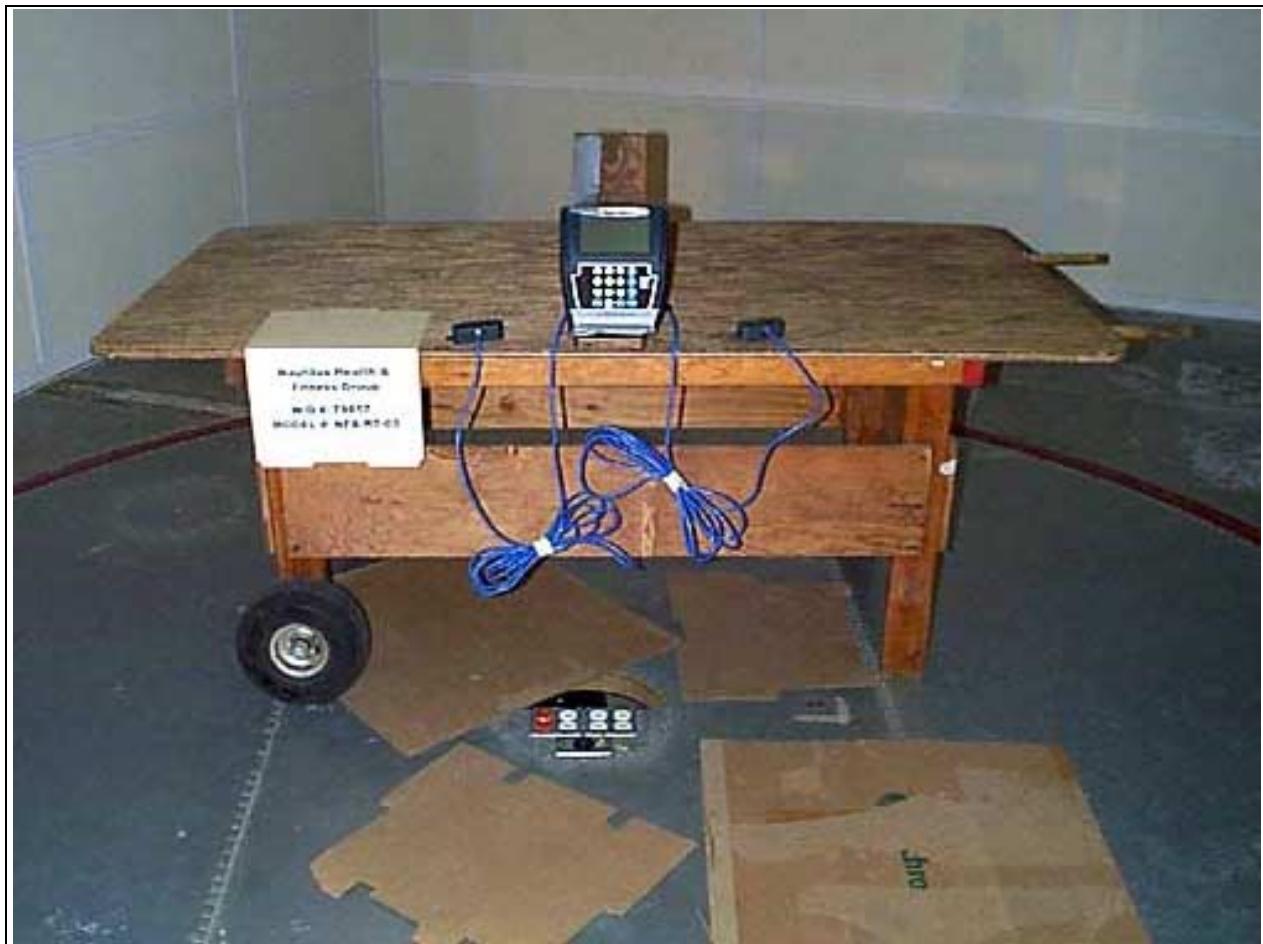
CRYSTAL OSCILLATORS	
Type	Freq In MHz
Ceramic Resonator	6
Quartz Crystal	8
Quartz Crystal	12
Quartz Crystal	101.856

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
Main Controller	Fitness Advisor NFA-RT-03A	8	2	
Range of Motion	Range of Motion ROM_2	8	4	
RF Transceiver	Aviator FAB 071694 Rev G	12, 101.856	4	
LCD Module	LCD-240G128A-FFH-VD	6	2	

CABLE INFORMATION

Cable #:	1	Cable(s) of this type:	2 Max
Cable Type:	Category 5	Shield Type:	None
Construction:	Twisted Pair	Length In Meters:	5 Max
Connected To End (1):	NFA-RT-03	Connected To End (2):	NFA-SROM-01
Connector At End (1):	RJ45	Connector At End (2):	RJ45
Shield Grounded At (1):	No	Shield Grounded At (2):	No
Part Number:	NFA-RTP-014	Number of Conductors:	8
Notes and/or description:	Main Controller to Range of Motion cable		

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

15.209/15.249

Function	S/N	Calibration Date	Cal Due Date	Asset #
Ant., Bilog, Chase CBL6111C	2630	10/04/2002	10/04/2003	852
Preamp, HP-8447F	2944A03850	03/08/2002	03/08/2003	501
QP Adapter	2430A00541	07/19/2002	07/19/2003	2508
S.A., Display	2112A02174	07/19/2002	07/19/2003	2509
S.A., RF Section	2049A01408	07/19/2002	07/19/2003	313
Cable, H-B 3M Rad., .01- 1000MHz	rad_cab_3M_02_hol- b.01-1000MHz	09/04/2002	09/04/2003	0
S.A., HP-8564E	01984	06/27/2002	06/27/2003	1406
Ant., Horn, Emco 3115	9307-5655	03/19/2002	03/19/2003	2157
Cable, H-B 3M Rad. 1- 13.5GHz	Hol-B 3-m rad cable-01- 1GHz-13.5GHz	10/02/2002	10/02/2003	0
HPF, 1.5GHz	3643800027	03/05/2002	03/05/2003	1416
Preamp, HP-83017A	3123A00283	05/09/2002	05/09/2003	785

15.209

Function	S/N	Calibration Date	Cal Due Date	Asset #
Ant., Bilog, Chase CBL6111C	2630	10/04/2002	10/04/2003	852
Preamp, HP-8447F	2944A03850	03/08/2002	03/08/2003	501
QP Adapter	2430A00541	07/19/2002	07/19/2003	2508
S.A., Display	2112A02174	07/19/2002	07/19/2003	2509
S.A., RF Section	2049A01408	07/19/2002	07/19/2003	313
Cable, H-B 3M Rad., .01- 1000MHz	rad_cab_3M_02_hol- b.01-1000MHz	09/04/2002	09/04/2003	0
S.A., HP-8564E	01984	06/27/2002	06/27/2003	1406
Ant., Horn, Emco 3115	9307-5655	03/19/2002	03/19/2003	2157
Cable, H-B 3M Rad. 1- 13.5GHz	Hol-B 3-m rad cable-01- 1GHz-13.5GHz	10/02/2002	10/02/2003	0
Preamp, HP-83017A	3123A00283	05/09/2002	05/09/2003	785

APPENDIX C
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd. Site B • Hollister, CA 95023 • 831-637-8176

Customer: **Nautilus Health & Fitness Group**
 Specification: **FCC 15.249 (902-928 MHz)+15.209**
 Work Order #: **79817** Date: 01/15/2003
 Test Type: **Radiated Scan/Transmitter Field Strength** Time: 20:22:20
 Equipment: **Wireless Fitness Tracking System** Sequence#: 4
 Manufacturer: Nautilus Health & Fitness Group Tested By: Art Rice
 Model: NFA-RT-03
 S/N: 2000000

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Fitness Tracking System*	Nautilus Health & Fitness Group	NFA-RT-03	2000000
Range of Motion Sensor	Nautilus Health & Fitness Group	NFA-SROM-01	2000103
Range of Motion Sensor	Nautilus Health & Fitness Group	NFA-SROM-01	2000104

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT- Wireless Fitness Tracking System is placed at the center rear edge of a wooden test table 80 cm above the ground plane. The EUT is mounted in a typical orientation at a 45 degree angle with the keyboard and display facing up. The Range of Motion Sensors are place to the right and left sides of the EUT. They are connected to the EUT with 15 foot long RJ-45 cables. The excess length of the cables is bundled to 40 cm above the ground plane. Note 1) The EUT is in the continuous transmitting mode at 906 MHz for this test. The transmitter is sending a packet about every 0.5 seconds. Note 2) The spectrum analyzer has 10 dB attenuation engaged for measurements below 1 GHz. RBW=VBW=100 kHz for fundamental measurement. Note 3) Includes -20 dB duty cycle correction for fundamental and harmonics. Radiated emissions 30 MHz to 10 GHz.

Transducer Legend:

T1=Amp Cal.HP-8447F OPT H64, S/N-2944A03850	T2=Chase bilog 2630
T3=H-B 3m Rad cable .01-1000 MHz	T4=Duty cycle correction -20 dB
T5=H-B 3 meter rad. cable 1-13.5 GHz	T6=Horn 1-18 GHz (Hollister)
T7=1.5GHz High Pass Filter, A/N 01415	T8=HP-83017A, S/N 3123A00283

<i>Measurement Data:</i>			Reading listed by margin.									Test Distance: 3 Meters			
#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar				
	MHz	dB μ V	T5	T6	T7	T8	Table	dB μ V/m	dB μ V/m	dB	Ant				
1	136.070M	53.0	-26.3	+11.5	+1.8	+0.0	+0.0	40.0	43.5	-3.5	Vert				
	QP		+0.0	+0.0	+0.0	+0.0						Dexter 0444164951			
												ferrites added to I/O			
												cables to range of			
												motion sensors.			
^	136.075M	52.7	-26.3	+11.5	+1.8	+0.0	+0.0	39.7	43.5	-3.8	Vert				
			+0.0	+0.0	+0.0	+0.0						Dexter 0444164951			
												ferrites added to I/O			
												cables to range of			
												motion sensors.			

3	305.651M	52.2	-25.9	+13.2	+2.8	+0.0	+0.0	42.3	46.0	-3.7	Horiz
	QP		+0.0	+0.0	+0.0	+0.0	+0.0				
^	305.604M	51.6	-25.9	+13.2	+2.8	+0.0	+0.0	41.7	46.0	-4.3	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
5	116.088M	53.2	-26.3	+11.2	+1.6	+0.0	+0.0	39.7	43.5	-3.8	Vert
	QP		+0.0	+0.0	+0.0	+0.0	+0.0				
^	116.061M	52.2	-26.3	+11.2	+1.6	+0.0	+0.0	38.7	43.5	-4.8	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
7	136.082M	52.1	-26.3	+11.5	+1.8	+0.0	+0.0	39.1	43.5	-4.4	Horiz
	QP		+0.0	+0.0	+0.0	+0.0	+0.0				
^	136.098M	51.4	-26.3	+11.5	+1.8	+0.0	+0.0	38.4	43.5	-5.1	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
9	72.049M	52.5	-26.5	+6.6	+1.2	+0.0	+0.0	33.8	40.0	-6.2	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
											Dexter 0444164951 ferrites added to I/O cables to range of motion sensors.
10	130.069M	49.7	-26.3	+11.6	+1.7	+0.0	+0.0	36.7	43.5	-6.8	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
11	176.080M	49.4	-26.1	+9.4	+2.2	+0.0	+0.0	34.9	43.5	-8.6	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
											Dexter 0444164951 ferrites added to I/O cables to range of motion sensors.
12	160.067M	47.8	-26.2	+10.5	+2.1	+0.0	+0.0	34.2	43.5	-9.3	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
13	152.042M	47.5	-26.2	+11.0	+1.9	+0.0	+0.0	34.2	43.5	-9.3	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
14	96.730M	49.4	-26.4	+9.6	+1.5	+0.0	+0.0	34.1	43.5	-9.4	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
15	176.062M	48.4	-26.1	+9.4	+2.2	+0.0	+0.0	33.9	43.5	-9.6	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
16	165.549M	47.2	-26.1	+10.1	+2.2	+0.0	+0.0	33.4	43.5	-10.1	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
17	148.152M	46.2	-26.2	+11.2	+1.9	+0.0	+0.0	33.1	43.5	-10.4	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
18	101.855M	47.8	-26.5	+10.2	+1.5	+0.0	+0.0	33.0	43.5	-10.5	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
19	98.246M	47.8	-26.5	+9.8	+1.5	+0.0	+0.0	32.6	43.5	-10.9	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
20	168.078M	46.5	-26.1	+9.9	+2.2	+0.0	+0.0	32.5	43.5	-11.0	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
21	144.055M	45.7	-26.3	+11.3	+1.8	+0.0	+0.0	32.5	43.5	-11.0	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
22	168.052M	46.4	-26.1	+9.9	+2.2	+0.0	+0.0	32.4	43.5	-11.1	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
23	99.375M	47.5	-26.5	+9.9	+1.5	+0.0	+0.0	32.4	43.5	-11.1	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
24	344.052M	43.8	-26.3	+14.2	+3.0	+0.0	+0.0	34.7	46.0	-11.3	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				

25	111.883M	46.0	-26.4	+10.9	+1.5	+0.0	+0.0	32.0	43.5	-11.5	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
26	124.008M	44.2	-26.3	+11.6	+1.6	+0.0	+0.0	31.1	43.5	-12.4	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
27	105.801M	45.0	-26.4	+10.5	+1.5	+0.0	+0.0	30.6	43.5	-12.9	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
28	57.489M	46.1	-26.6	+6.3	+1.1	+0.0	+0.0	26.9	40.0	-13.1	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
29	360.065M	41.4	-26.4	+14.7	+3.0	+0.0	+0.0	32.7	46.0	-13.3	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
30	400.044M	39.2	-26.7	+15.7	+3.2	+0.0	+0.0	31.4	46.0	-14.6	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
31	368.075M	39.7	-26.5	+14.9	+3.2	+0.0	+0.0	31.3	46.0	-14.7	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
32	384.027M	39.4	-26.6	+15.3	+3.1	+0.0	+0.0	31.2	46.0	-14.8	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
33	9060.005M	42.0	+0.0	+0.0	+0.0	-20.0	+0.0	38.9	54.0	-15.1	Vert
			+16.9	+36.2	+1.7	-37.9					Noise floor.
34	105.806M	42.2	-26.4	+10.5	+1.5	+0.0	+0.0	27.8	43.5	-15.7	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
35	328.074M	39.8	-26.1	+13.8	+2.8	+0.0	+0.0	30.3	46.0	-15.7	Vert
			+0.0	+0.0	+0.0	+0.0	+0.0				
36	130.016M	40.6	-26.3	+11.6	+1.7	+0.0	+0.0	27.6	43.5	-15.9	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
37	906.000M	96.4	+0.0	+0.0	+0.0	-20.0	+0.0	76.8	94.0	-17.2	Vert
											Fundamental.
38	2717.862M	56.8	+0.0	+0.0	+0.0	-20.0	+0.0	36.7	54.0	-17.3	Horiz
			+7.9	+30.1	+0.5	-38.6					
39	2717.780M	56.5	+0.0	+0.0	+0.0	-20.0	+0.0	36.4	54.0	-17.6	Vert
			+7.9	+30.1	+0.5	-38.6					
40	102.781M	40.3	-26.5	+10.2	+1.5	+0.0	+0.0	25.5	43.5	-18.0	Horiz
			+0.0	+0.0	+0.0	+0.0	+0.0				
41	8153.565M	41.8	+0.0	+0.0	+0.0	-20.0	+0.0	35.0	54.0	-19.0	Horiz
			+15.9	+34.4	+0.8	-37.9					Noise floor.
42	8154.005M	41.7	+0.0	+0.0	+0.0	-20.0	+0.0	34.9	54.0	-19.1	Vert
			+15.9	+34.4	+0.8	-37.9					Noise floor.
43	1812.000M	60.0	+0.0	+0.0	+0.0	-20.0	+0.0	33.8	54.0	-20.2	Vert
			+6.5	+25.7	+0.6	-39.0					
44	4529.762M	49.0	+0.0	+0.0	+0.0	-20.0	+0.0	33.7	54.0	-20.3	Horiz
			+10.9	+31.0	+1.0	-38.2					
45	7248.000M	42.0	+0.0	+0.0	+0.0	-20.0	+0.0	33.4	54.0	-20.6	Vert
			+15.0	+33.3	+0.8	-37.7					Noise floor.
46	7247.615M	41.7	+0.0	+0.0	+0.0	-20.0	+0.0	33.1	54.0	-20.9	Horiz
			+15.0	+33.3	+0.8	-37.7					Noise floor.
47	906.000M	92.5	+0.0	+0.0	+0.0	-20.0	+0.0	72.9	94.0	-21.1	Horiz
											Fundamental.
48	4529.635M	47.0	+0.0	+0.0	+0.0	-20.0	+0.0	31.7	54.0	-22.3	Vert
			+10.9	+31.0	+1.0	-38.2					
49	3623.755M	46.0	+0.0	+0.0	+0.0	-20.0	+0.0	28.8	54.0	-25.2	Vert
			+9.5	+30.4	+1.0	-38.1					

50	1811.912M	54.3	+0.0	+0.0	+0.0	-20.0	+0.0	28.1	54.0	-25.9	Horiz
			+6.5	+25.7	+0.6	-39.0					
51	3623.812M	42.3	+0.0	+0.0	+0.0	-20.0	+0.0	25.1	54.0	-28.9	Horiz
			+9.5	+30.4	+1.0	-38.1					Noise floor.
52	6341.671M	41.7	+0.0	+0.0	+0.0	-20.0	+0.0	23.5	54.0	-30.5	Horiz
			+14.0	+25.5	+0.2	-37.9					Noise floor.
53	6342.005M	40.5	+0.0	+0.0	+0.0	-20.0	+0.0	22.3	54.0	-31.7	Vert
			+14.0	+25.5	+0.2	-37.9					Noise floor.
54	5436.000M	41.5	+0.0	+0.0	+0.0	-20.0	+0.0	21.7	54.0	-32.3	Vert
			+12.6	+24.8	+0.8	-38.0					Noise floor.
55	5435.720M	40.8	+0.0	+0.0	+0.0	-20.0	+0.0	21.0	54.0	-33.0	Horiz
			+12.6	+24.8	+0.8	-38.0					Noise floor.

Test Location: CKC Laboratories, Inc. • 480 Los Viboras Rd. Site B • Hollister, CA 95023 • 831-637-8176

Customer: **Nautilus Health & Fitness Group**
 Specification: **FCC 15.109 Class B Radiated**
 Work Order #: **79817** Date: 01/15/2003
 Test Type: **Radiated Scan/Maximized** Time: 19:51:18
 Equipment: **Wireless Fitness Tracking System** Sequence #: 3
 Manufacturer: Nautilus Health & Fitness Group Tested By: Art Rice
 Model: NFA-RT-03
 S/N: 2000000

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Wireless Fitness Tracking System*	Nautilus Health & Fitness Group	NFA-RT-03	2000000
Range of Motion Sensor	Nautilus Health & Fitness Group	NFA-SROM-01	2000103
Range of Motion Sensor	Nautilus Health & Fitness Group	NFA-SROM-01	2000104

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT- Wireless Fitness Tracking System is placed at the center rear edge of a wooden test table 80 cm above the ground plane. The EUT is mounted in a typical orientation at a 45 degree angle with the keyboard and display facing up. The Range of Motion Sensors are place to the right and left sides of the EUT. They are connected to the EUT with 15 foot long RJ-45 cables. The excess length of the cables is bundled to 40 cm above the ground plane. Note 1) The EUT is in the continuous receiving mode at 906 MHz for this test. The receive LO is at 916.704 MHz. Note 2) Added a ferrite to each of the I/O cables that connect to the range of motion sensors. Dexter Magnetics (Fair-Rite) 0444164951. The digital circuitry is in the normal operational mode. Radiated emissions 30 MHz to 10 GHz.

Transducer Legend:

T1=Amp Cal.HP-8447F OPT H64, S/N-2944A03850	T2=Chase bilog 2630
T3=H-B 3m Rad cable .01-1000 MHz	T4=H-B 3 meter rad. cable 1-13.5 GHz
T5=Horn 1-18 GHz (Hollister)	T6=HP-83017A, S/N 3123A00283

Measurement Data:				Reading listed by margin.								Test Distance: 3 Meters			
#	Freq	Rdng		T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar			
				T5	T6			Table							
	MHz	dB μ V		dB	dB	dB	dB								
1	305.604M	50.8		-25.9	+13.2	+2.8	+0.0	+0.0		40.9	46.0	-5.1	Horiz		
	QP			+0.0	+0.0										
^	305.647M	50.2		-25.9	+13.2	+2.8	+0.0	+0.0		40.3	46.0	-5.7	Horiz		
				+0.0	+0.0										
3	130.024M	50.6		-26.3	+11.6	+1.7	+0.0	+0.0		37.6	43.5	-5.9	Vert		
				+0.0	+0.0										
4	916.726M	39.0		-27.0	+23.0	+5.0	+0.0	+0.0		40.0	46.0	-6.0	Horiz		
				+0.0	+0.0										
5	916.727M	38.2		-27.0	+23.0	+5.0	+0.0	+0.0		39.2	46.0	-6.8	Vert		
				+0.0	+0.0										
6	70.207M	51.9		-26.5	+6.4	+1.2	+0.0	+0.0		33.0	40.0	-7.0	Vert		
				+0.0	+0.0										
7	344.057M	47.9		-26.3	+14.2	+3.0	+0.0	+0.0		38.8	46.0	-7.2	Horiz		
				+0.0	+0.0										

8	72.037M	51.3	-26.5 +0.0	+6.6 +0.0	+1.2	+0.0	+0.0	32.6	40.0	-7.4	Vert
9	116.464M	49.3	-26.3 +0.0	+11.3 +0.0	+1.6	+0.0	+0.0	35.9	43.5	-7.6	Vert
10	142.124M	48.9	-26.3 +0.0	+11.4 +0.0	+1.8	+0.0	+0.0	35.8	43.5	-7.7	Vert
11	52.938M	50.7	-26.7 +0.0	+7.2 +0.0	+1.0	+0.0	+0.0	32.2	40.0	-7.8	Vert
12	305.645M	47.5	-25.9 +0.0	+13.2 +0.0	+2.8	+0.0	+0.0	37.6	46.0	-8.4	Vert
13	117.993M	48.3	-26.3 +0.0	+11.4 +0.0	+1.6	+0.0	+0.0	35.0	43.5	-8.5	Vert
14	86.156M	47.9	-26.5 +0.0	+8.3 +0.0	+1.5	+0.0	+0.0	31.2	40.0	-8.8	Vert
15	176.072M	48.7	-26.1 +0.0	+9.4 +0.0	+2.2	+0.0	+0.0	34.2	43.5	-9.3	Vert
16	368.083M	44.9	-26.5 +0.0	+14.9 +0.0	+3.2	+0.0	+0.0	36.5	46.0	-9.5	Horiz
17	60.648M	50.1	-26.6 +0.0	+5.8 +0.0	+1.2	+0.0	+0.0	30.5	40.0	-9.5	Vert
18	168.082M	47.8	-26.1 +0.0	+9.9 +0.0	+2.2	+0.0	+0.0	33.8	43.5	-9.7	Vert
19	4583.532M	41.0	+0.0	+0.0	+0.0	+11.0	+0.0	44.3	54.0	-9.7	Horiz
			+30.4	-38.1					Noise floor.		
20	176.068M	48.2	-26.1 +0.0	+9.4 +0.0	+2.2	+0.0	+0.0	33.7	43.5	-9.8	Horiz
21	352.037M	44.7	-26.3 +0.0	+14.5 +0.0	+3.1	+0.0	+0.0	36.0	46.0	-10.0	Horiz
22	416.067M	43.4	-26.8 +0.0	+16.1 +0.0	+3.3	+0.0	+0.0	36.0	46.0	-10.0	Vert
23	111.915M	47.5	-26.4 +0.0	+10.9 +0.0	+1.5	+0.0	+0.0	33.5	43.5	-10.0	Vert
24	160.078M	46.8	-26.2 +0.0	+10.5 +0.0	+2.1	+0.0	+0.0	33.2	43.5	-10.3	Vert
25	136.066M	46.0	-26.3 +0.0	+11.5 +0.0	+1.8	+0.0	+0.0	33.0	43.5	-10.5	Horiz
26	4583.513M	40.2	+0.0	+0.0	+0.0	+11.0	+0.0	43.5	54.0	-10.5	Vert
			+30.4	-38.1					Noise floor.		
27	2750.124M	43.8	+0.0	+0.0	+0.0	+8.0	+0.0	43.5	54.0	-10.5	Horiz
			+30.3	-38.6					Noise floor.		
28	3666.828M	41.5	+0.0	+0.0	+0.0	+9.6	+0.0	43.4	54.0	-10.6	Horiz
			+30.4	-38.1					Noise floor.		
29	384.085M	43.4	-26.6 +0.0	+15.3 +0.0	+3.1	+0.0	+0.0	35.2	46.0	-10.8	Horiz
30	101.856M	47.3	-26.5 +0.0	+10.2 +0.0	+1.5	+0.0	+0.0	32.5	43.5	-11.0	Vert
31	84.983M	45.9	-26.5 +0.0	+8.1 +0.0	+1.4	+0.0	+0.0	28.9	40.0	-11.1	Vert
32	400.078M	42.5	-26.7 +0.0	+15.7 +0.0	+3.2	+0.0	+0.0	34.7	46.0	-11.3	Vert

33	6416.933M	41.0	+0.0	+0.0	+0.0	+14.1	+0.0	42.5	54.0	-11.5	Horiz
			+25.4	-38.0						Noise floor.	
34	3666.813M	40.5	+0.0	+0.0	+0.0	+9.6	+0.0	42.4	54.0	-11.6	Vert
			+30.4	-38.1						Noise floor.	
35	1833.408M	48.7	+0.0	+0.0	+0.0	+6.5	+0.0	41.9	54.0	-12.1	Vert
			+25.7	-39.0							
36	360.024M	42.4	-26.4	+14.7	+3.0	+0.0	+0.0	33.7	46.0	-12.3	Horiz
			+0.0	+0.0							
37	400.047M	41.4	-26.7	+15.7	+3.2	+0.0	+0.0	33.6	46.0	-12.4	Horiz
			+0.0	+0.0							
38	384.099M	41.8	-26.6	+15.3	+3.1	+0.0	+0.0	33.6	46.0	-12.4	Vert
			+0.0	+0.0							
39	136.068M	43.9	-26.3	+11.5	+1.8	+0.0	+0.0	30.9	43.5	-12.6	Vert
			+0.0	+0.0							
40	123.964M	44.0	-26.3	+11.6	+1.6	+0.0	+0.0	30.9	43.5	-12.6	Vert
			+0.0	+0.0							
41	6416.921M	39.8	+0.0	+0.0	+0.0	+14.1	+0.0	41.3	54.0	-12.7	Vert
			+25.4	-38.0						Noise floor.	
42	48.042M	44.1	-26.6	+8.6	+1.1	+0.0	+0.0	27.2	40.0	-12.8	Vert
			+0.0	+0.0							
43	60.592M	46.6	-26.6	+5.8	+1.2	+0.0	+0.0	27.0	40.0	-13.0	Horiz
			+0.0	+0.0							
44	51.476M	45.0	-26.6	+7.6	+1.0	+0.0	+0.0	27.0	40.0	-13.0	Vert
			+0.0	+0.0							
45	2750.112M	41.3	+0.0	+0.0	+0.0	+8.0	+0.0	41.0	54.0	-13.0	Vert
			+30.3	-38.6						Noise floor.	
46	344.078M	41.7	-26.3	+14.2	+3.0	+0.0	+0.0	32.6	46.0	-13.4	Vert
			+0.0	+0.0							
47	368.025M	40.9	-26.5	+14.9	+3.2	+0.0	+0.0	32.5	46.0	-13.5	Vert
			+0.0	+0.0							
48	144.049M	42.2	-26.3	+11.3	+1.8	+0.0	+0.0	29.0	43.5	-14.5	Horiz
			+0.0	+0.0							
49	5500.236M	40.2	+0.0	+0.0	+0.0	+12.7	+0.0	39.5	54.0	-14.5	Horiz
			+24.6	-38.0						Noise floor.	
50	336.038M	40.7	-26.2	+14.0	+2.9	+0.0	+0.0	31.4	46.0	-14.6	Horiz
			+0.0	+0.0							
51	5500.217M	40.0	+0.0	+0.0	+0.0	+12.7	+0.0	39.3	54.0	-14.7	Vert
			+24.6	-38.0						Noise floor.	
52	1833.375M	46.0	+0.0	+0.0	+0.0	+6.5	+0.0	39.2	54.0	-14.8	Horiz
			+25.7	-39.0							
53	142.169M	41.7	-26.3	+11.4	+1.8	+0.0	+0.0	28.6	43.5	-14.9	Horiz
			+0.0	+0.0							
54	86.032M	38.9	-26.5	+8.3	+1.5	+0.0	+0.0	22.2	40.0	-17.8	Horiz
			+0.0	+0.0							
55	72.082M	40.5	-26.5	+6.6	+1.2	+0.0	+0.0	21.8	40.0	-18.2	Horiz
			+0.0	+0.0							
56	105.810M	36.3	-26.4	+10.5	+1.5	+0.0	+0.0	21.9	43.5	-21.6	Horiz
			+0.0	+0.0							
57	111.860M	35.4	-26.4	+10.9	+1.5	+0.0	+0.0	21.4	43.5	-22.1	Horiz
			+0.0	+0.0							