POWERWAVE TECHNOLOGIES, INC. TEST REPORT

FOR THE

RF REPEATER, AR 1200

FCC PART 15 SUBPART C SECTIONS 24 & 90 AND SUBPART B SECTIONS 15.107 & 15.109 CLASS B

COMPLIANCE

DATE OF ISSUE: APRIL 19, 2007

PREPARED FOR:

Powerwave Technologies, Inc.
1801 E. St. Andrew Place
Santa Ana, CA 92705

P.O. No.: 112436
W.O. No.: 86400

PREPARED BY:

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

Date of test: March 30 - April 18, 2007

Report No.: FC07-031

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST: March 30 - April 18, 2007

DATE OF RECEIPT: March 30, 2007

FREQUENCY RANGE TESTED: 9 kHz-10 GHz

MANUFACTURER: Powerwave Technologies, Inc.
1801 E. St. Andrew Place
Santa Ana, CA 92705

REPRESENTATIVE: Jeffrey Dale

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

TEST METHOD: ANSI C63.4 (2003)

PURPOSE OF TEST: To demonstrate the compliance of the RF Repeater, AR 1200 with the requirements for FCC Part 15 Subpart C Sections 24 & 90 and Subpart B Sections 15.107 & 15.109 Class B devices.

APPROVALS:

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Eddie Wong, EMC Engineer

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST

RF Repeater

Manuf:	Powerwave Technologies
Model:	AR 1200
Serial:	NA
FCC ID:	pending

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

ESG

Manuf:	Agilent
Model:	E4433B
Serial:	US40051207

Power Meter

Manuf:	Agilent
Model:	E4419B
Serial:	MY40510694

Spectrum Analyzer

Manuf:	HP
Model:	8563E
Serial:	NA

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
F1D and D7W

FCC 2.1033 (c)(5) FREQUENCY RANGE
935-940.5 MHz

FCC 2.1033 (c)(6) OPERATING POWER
0.25 Watts for Part 24 and 4 watts for Part 90.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
3500 watts ERP for Part 24 and 500 watts for Part 90.

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
AMPS and iDEN

FCC 2.1033(c)(14)/2.1046/24.132(c) - RF POWER OUTPUT

Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
RF Power meter	02778	HP	EPM-441A	GB37170458	012706	012708
Power Sensor	02777	HP	E4412A	MY41499662	012706	012708

Test Setup Photos

Test Data Sheets

24.132(c) RF Output Power

(c) Base stations transmitting in the 930–931 MHz and 940–941 MHz bands are limited to 3500 watts e.r.p. per authorized channel and are unlimited in antenna height except as provided in paragraph (d) of this section.

The EUT is a RF amplifier. The manufacturer does not provide an antenna for sale with the product, hence EIRP is not measured nor calculated. The end user of this product is to exercise proper engineering judgement to select the appropriate antenna to comply with the EIRP limitation set forth by FCC 24.132(c).

The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power.

Modulation	Frequency	Power (dBm)	Power (Watts
AMPS-data	940.1 MHz	24	0.25

FCC 2.1033(c)(14)/2.1051/24.133(a)(2)(ii) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Setup Photos

Limit line for Spurious Conducted Emission

Required Attenuation = 43+10 Log P dB

Limit line (dBuV) = V_{dBuv} - Attenuation

V_{dBuV} = $20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$

= $20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$

= $20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$

= $20 \text{ Log } V - 20(-6)$

= $20 \text{ Log } V + 120$

Attenuation = $43 + 10 \text{ Log } P$

= $43 + 10 \text{ Log } \frac{V^2}{R}$

= $43 + 10\left(\text{Log } V^2 - \text{Log } R\right)$

= $43 + 10\left(2 \text{ Log } V - \text{Log } R\right)$

= $43 + 20 \text{ Log } V - 10 \text{ Log } R$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

= 94 dBuV at any power level

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**24.133(a)(2)(ii) Conducted Spurious Emission**		
Work Order #:	**83894**	Date:	4/17/2007
Test Type:	**Conducted Emissions**	Time:	15:24:44
Equipment:	**RF Repeater**	Sequence#:	11
Manufacturer:	Powerwave Technologies	Tested By:	E. Wong
Model:	AR 1200		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
1.5 GHz HPF	3643A00027	06/27/2005	06/27/2007	02116

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: AMPS_data, Power = 0.25 Watts. Frequency: 940.5 MHz. Frequency range of measurement = 9kHz - 10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Transducer Legend:

T1=SMA-cable_W_05204-021609-26GHz	T2=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	6583.500M Ave	46.0	+3.0	+1.0			+0.0	50.0	94.0	-44.0	Anten
^	6583.500M	56.8	+3.0	+1.0			+0.0	60.8	94.0	-33.2	Anten

FCC 2.1033(c)(14)/2.1053/24.133(a)(2)(ii) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **24.133(a)(2)(ii) Radiated Spurious Emission**
Work Order #: **83894** Date: 4/18/2007
Test Type: **Radiated Scan** Time: 09:37:29
Equipment: **RF Repeater** Sequence#: 7
Manufacturer: Powerwave Technologies Tested By: E. Wong
Model: AR 1200
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Loop Antenna	2014	06/14/2006	06/14/2008	00314
Bilog Antenna	2451	02/02/2006	02/02/2008	01995
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
Pre amp to SA Cable	Cable #10	05/16/2005	05/16/2007	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support Signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: AMPS-data, Power = 0.25 Watts. Frequency: 940.5 MHz. Frequency range of measurement = 9kHz -10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Operating Frequency: 940.1 MHz
Channels: Single
Highest Measured Output Power: 23.98 ERP(dBm)= 0.25 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 36.98 dBc

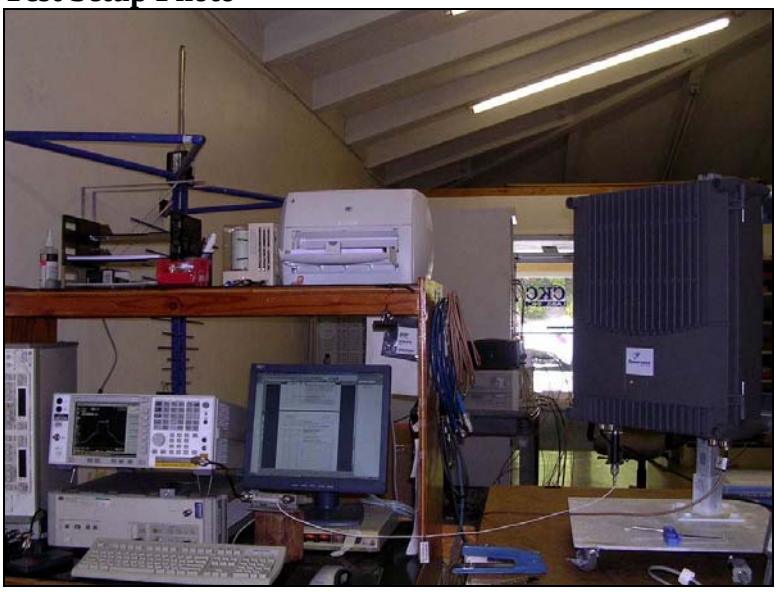
Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,880.99	-52.9	Vert	76.88
1,880.97	-53.8	Horiz	77.78
2,821.47	-54.3	Vert	78.28

FCC PART 24 INPUT PLOT - AMPS - 940.5 MHz

Test Equipment

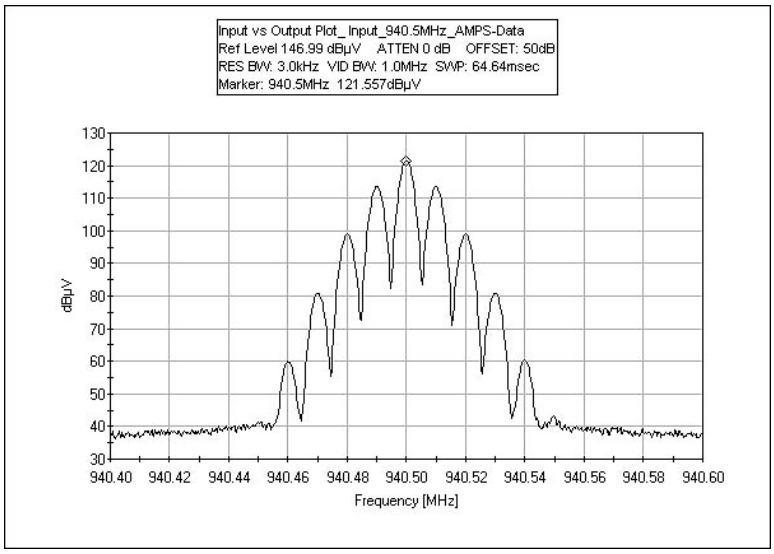
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo



Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

Plot

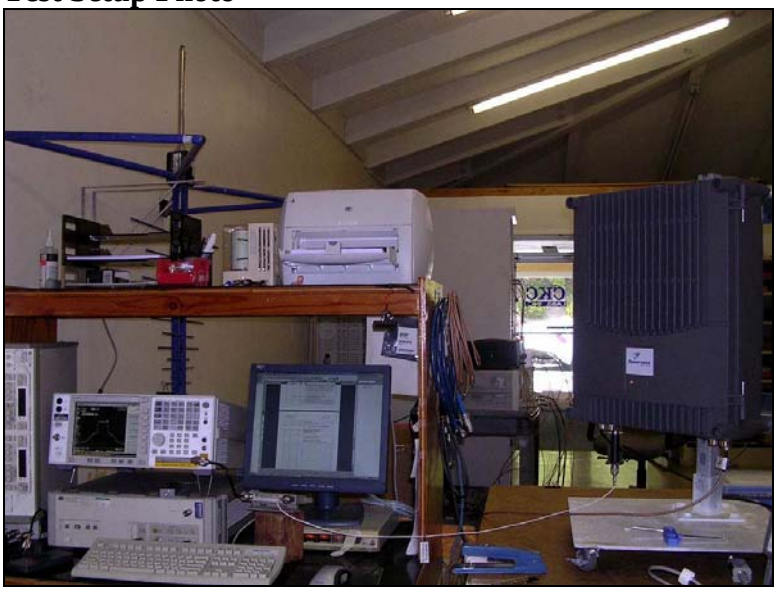


FCC PART 24 OUTPUT PLOT - AMPS - 940.5 MHz

Test Equipment

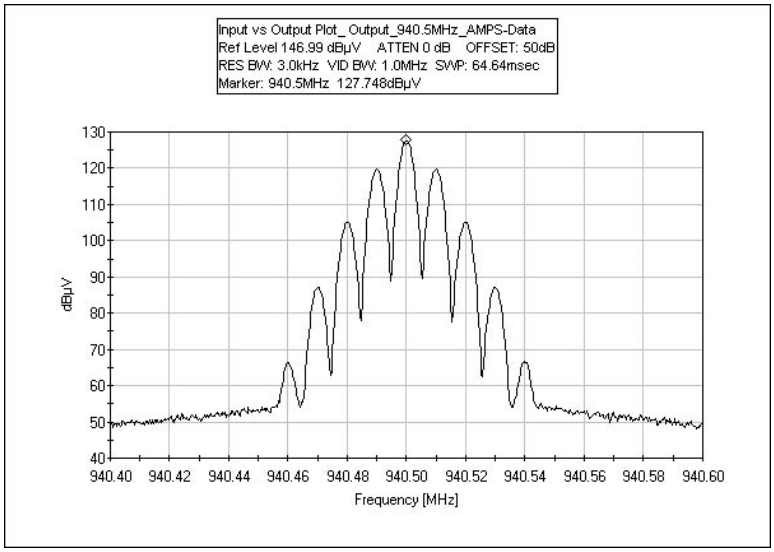
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo



Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

Plot

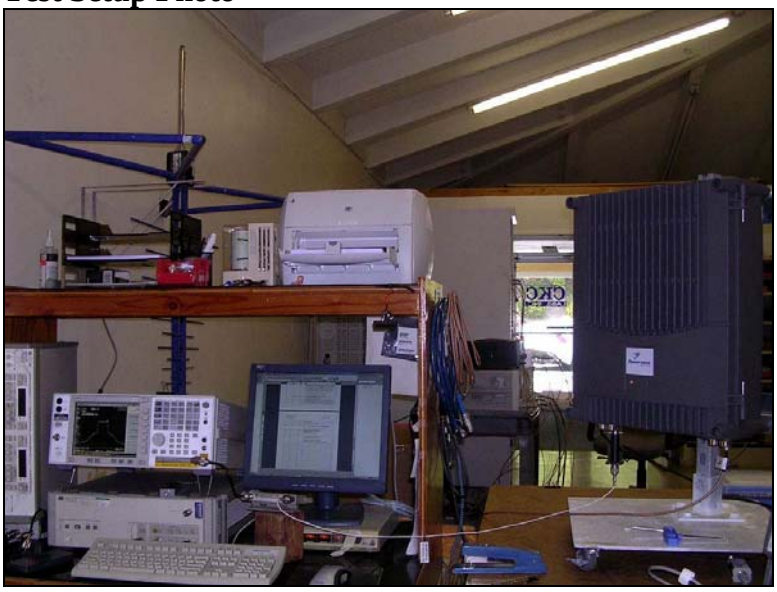


FCC PART 24 BANDEDGE PLOT - AMPS - 940.5 MHz

Test Equipment

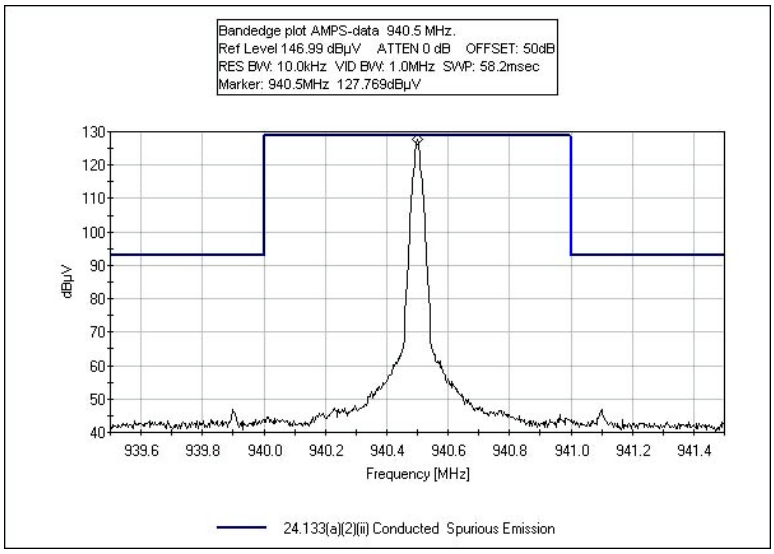
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo



Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

Plot



FCC 2.1033(c)(14)/2.1046/90.635(b) - RF POWER OUTPUT

Test Equipment

Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
RF Power meter	02778	HP	EPM-441A	GB37170458	012706	012708
Power Sensor	02777	HP	E4412A	MY41499662	012706	012708

Test Setup Photos

90.635(b) RF Output Power

The effective radiated power and antenna height, for base stations used in suburban-conventional systems of communications shall be no greater than 500 watts.

The EUT is a RF amplifier. The manufacture does not provide an antenna for sale with the product, hence EIRP is not measured nor calculated. The end user of this product is to exercise proper engineering judgement to select the appropriate antenna to comply with the EIRP limitation set forth by FCC 90.635(b).

The RF power of the EUT was measured at the antenna port. The measurement satisfies the above requirement by demonstrating the measured power is below 3500W limit.

The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power.

Modulation	Frequency	Power (dBm)	Power (Watts)
iDEN	935 MHz	36	4
iDEN	937 MHz	36	4
iDEN	940 MHz	36	4

FCC 2.1033(c)(14)/2.1051/90.691(a)(2) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Setup Photos

Limit line for Spurious Conducted Emission

Required Attenuation = 43+10 Log P dB

Limit line (dBuV) = V_{dBuv} - Attenuation

V_{dBuV} = $20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$

= $20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$

= $20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$

= $20 \text{ Log } V - 20(-6)$

= $20 \text{ Log } V + 120$

Attenuation = $43 + 10 \text{ Log } P$

= $43 + 10 \text{ Log } \frac{V^2}{R}$

= $43 + 10\left(\text{Log } V^2 - \text{Log } R\right)$

= $43 + 10\left(2 \text{ Log } V - \text{Log } R\right)$

= $43 + 20 \text{ Log } V - 10 \text{ Log } R$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

= 94 dBuV at any power level

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC90.691 (a) Conducted Spurious emission**		
Work Order #:	**83894**	Date:	4/17/2007
Test Type:	**Conducted Emissions**	Time:	14:26:59
Equipment:	**RF Repeater**	Sequence#:	9
Manufacturer:	Powerwave Technologies	Tested By:	E. Wong
Model:	AR 1200		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
1.5 GHz HPF	3643A00027	06/27/2005	06/27/2007	02116

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: iDEN, Power = 4 Watts. Frequency: 937.5 MHz. Frequency range of measurement = 9kHz - 10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Transducer Legend:

T1=SMA-cable_W_05204-021609-26GHz	T2=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	6562.450M Ave	44.8	+3.0	+1.0			+0.0	48.8	94.0	-45.2	Anten
^	6562.450M	69.7	+3.0	+1.0			+0.0	73.7	94.0	-20.3	Anten

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC90.691 (a) Conducted Spurious emission**		
Work Order #:	**83894**	Date:	4/17/2007
Test Type:	**Conducted Emissions**	Time:	14:14:26
Equipment:	**RF Repeater**	Sequence#:	8
Manufacturer:	Powerwave Technologies	Tested By:	E. Wong
Model:	AR 1200		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
1.5 GHz HPF	3643A00027	06/27/2005	06/27/2007	02116

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support Signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: iDEN, Power = 4 Watts. Frequency: 935 MHz. Frequency range of measurement = 9kHz -10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Transducer Legend:

T1=SMA-cable_W_05204-021609-26GHz	T2=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	6548.484M Ave	34.6	+3.0	+1.0			+0.0	38.6	94.0	-55.4	Anten
^	6548.484M	61.3	+3.0	+1.0			+0.0	65.3	94.0	-28.7	Anten

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC90.691 (a) Conducted Spurious emission**		
Work Order #:	**83894**	Date:	4/17/2007
Test Type:	**Conducted Emissions**	Time:	14:41:23
Equipment:	**RF Repeater**	Sequence#:	10
Manufacturer:	Powerwave Technologies	Tested By:	E. Wong
Model:	AR 1200		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
1.5 GHz HPF	3643A00027	06/27/2005	06/27/2007	02116

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support Signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: iDEN, Power = 4 Watts. Frequency: 940 MHz. Frequency range of measurement = 9kHz -10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Transducer Legend:

T1=SMA-cable_W_05204-021609-26GHz	T2=HPF_AN02116_1.5GHz_062707

Measurement Data: Reading listed by margin. Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	6576.233M Ave	44.6	+3.0	+1.0			+0.0	48.6	94.0	-45.4	Anten
^	6576.233M	59.3	+3.0	+1.0			+0.0	63.3	94.0	-30.7	Anten

FCC 2.1033(c)(14)/2.1053/90.691(a)(2) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **FCC Part 90.691(a)(2) Radiated Spurious Emission**
Work Order #: **83894** Date: 4/18/2007
Test Type: **Radiated Scan** Time: 10:06:42
Equipment: **RF Repeater** Sequence#: 4
Manufacturer: Powerwave Technologies Tested By: E. Wong
Model: AR 1200
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Loop Antenna	2014	06/14/2006	06/14/2008	00314
Bilog Antenna	2451	02/02/2006	02/02/2008	01995
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
Pre amp to SA Cable	Cable #10	05/16/2005	05/16/2007	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
24" SMA Cable	1-40GHz_white	02/16/2007	02/16/2009	P05204
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
ESG	Agilent	E4433B	US40051207
Power Meter	Agilent	E4419B	MY40510694
Spectrum Analyzer	HP	8563E	NA

Test Conditions / Notes:

The EUT is placed on the wooden table. RF Input port is connected to a remote support Signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Modulation: iDEN, Power = 4 Watts. Frequency: 935 MHz, 937.5 MHz and 940 MHz. Frequency range of measurement = 9kHz -10 GHz. 9 kHz - 150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz - 10000 MHz; RBW=1 MHz, VBW=1 MHz. 21°C, 27% relative humidity.

Operating Frequency: 935 MHz - 940 MHz
Channels: Low, Mid and High
Highest Measured Output Power: 36.02 ERP(dBm)= 4 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 49.02 dBc

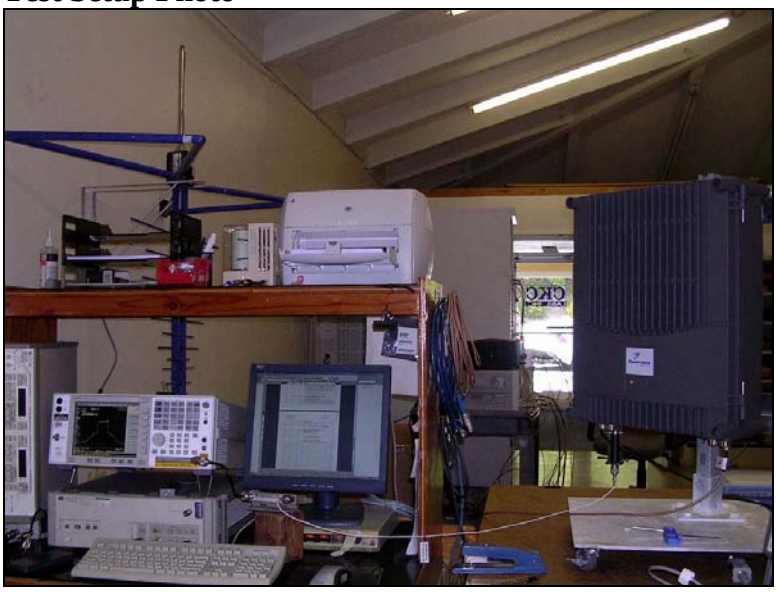
Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
1,871.00	-57.7	Horiz	93.72
2,806.50	-53.9	Horiz	89.92
1,871.00	-56.8	Vert	92.82
2,812.50	-53.8	Vert	89.82
2,812.50	-53.9	Horiz	89.92
1,875.00	-57.3	Vert	93.32
1,875.00	-58.1	Horiz	94.12
3,758.35	-52.3	Horiz	88.32
2,818.50	-55.8	Vert	91.82
1,879.00	-57.3	Vert	93.32
1,879.35	-58.1	Horiz	94.12

FCC PART 90 INPUT PLOTS

Test Equipment

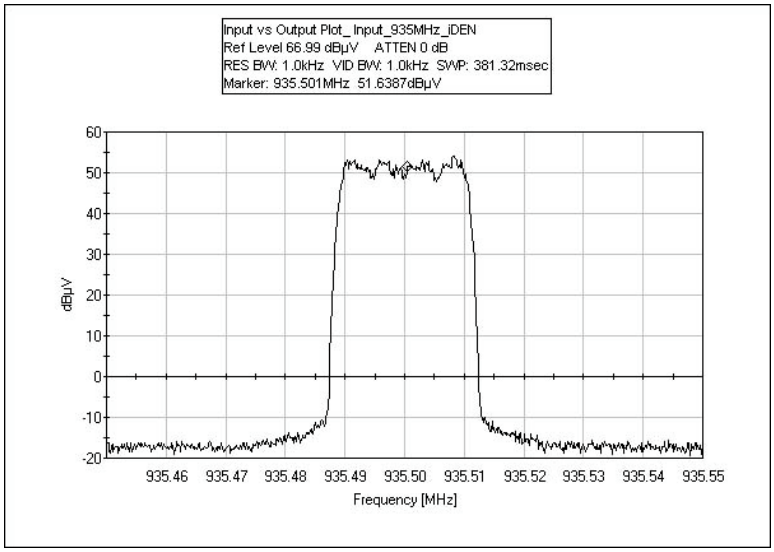
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo

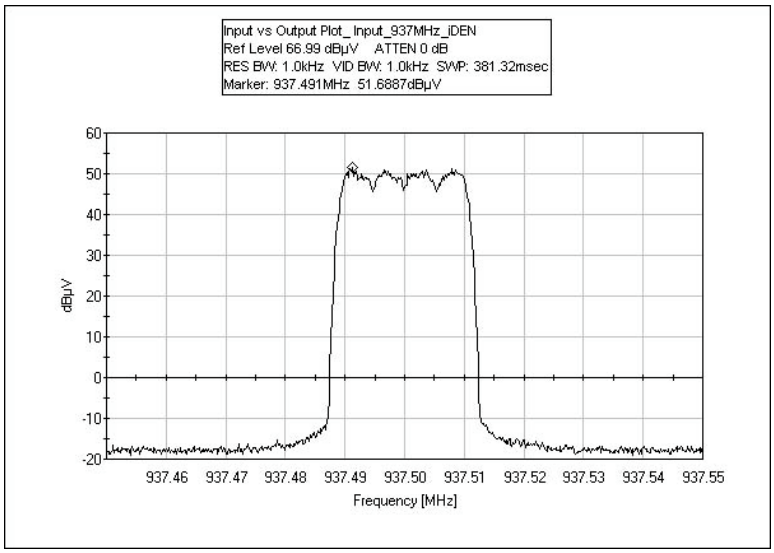


Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

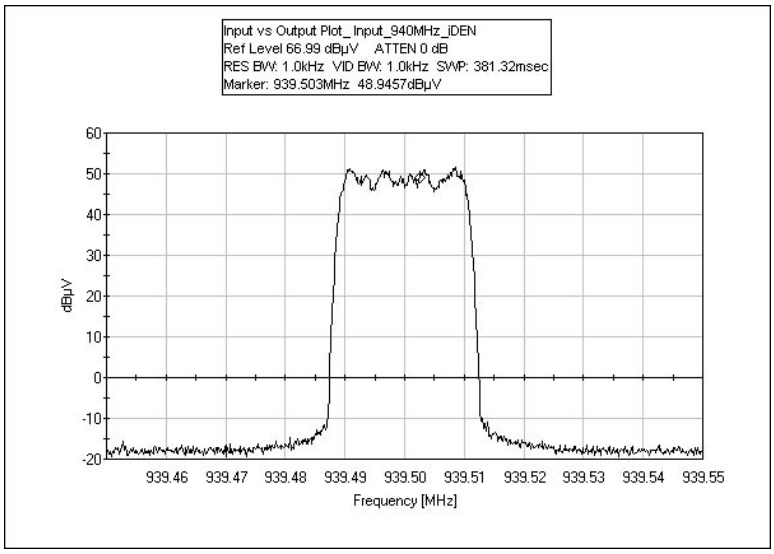
FCC PART 90 INPUT PLOT - iDEN 935 MHz



FCC PART 90 INPUT PLOT - iDEN 937 MHz



FCC PART 90 INPUT PLOT - iDEN 940 MHz

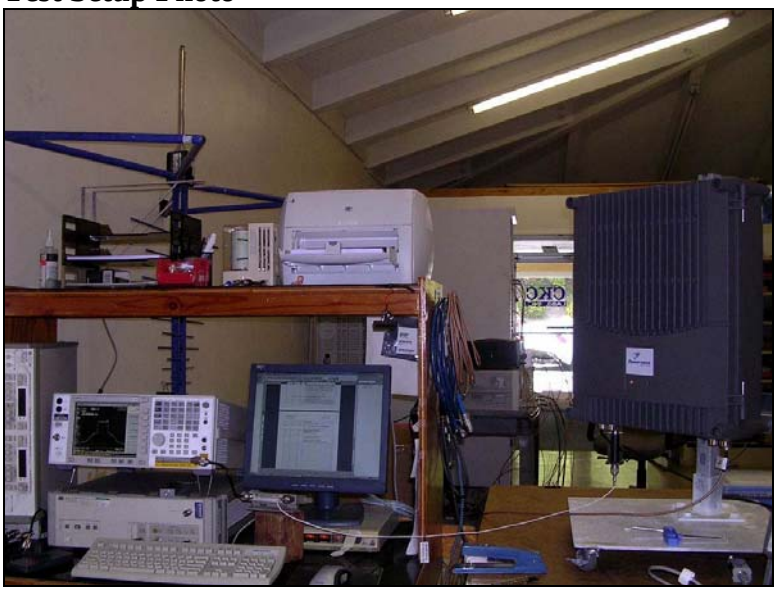


FCC PART 90 OUTPUT PLOTS

Test Equipment

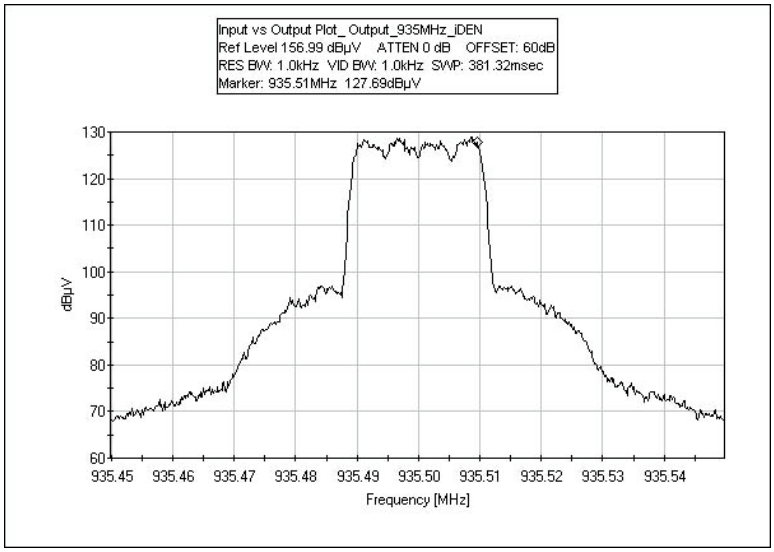
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo

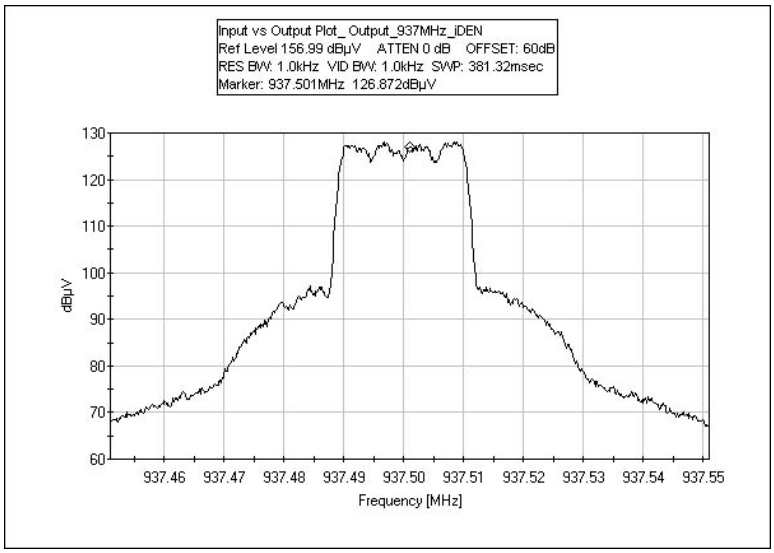


Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

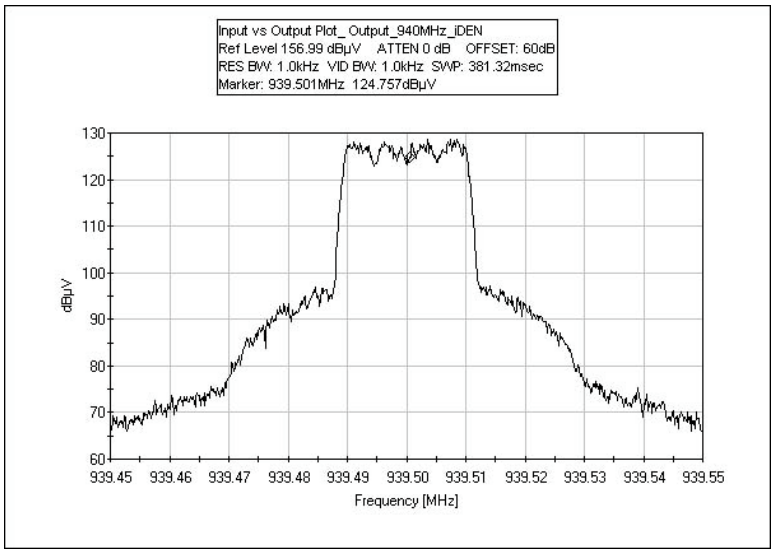
FCC PART 90 OUTPUT PLOT - iDEN 935 MHz



FCC PART 90 OUTPUT PLOT - iDEN 937 MHz



FCC PART 90 OUTPUT PLOT - iDEN 940 MHz

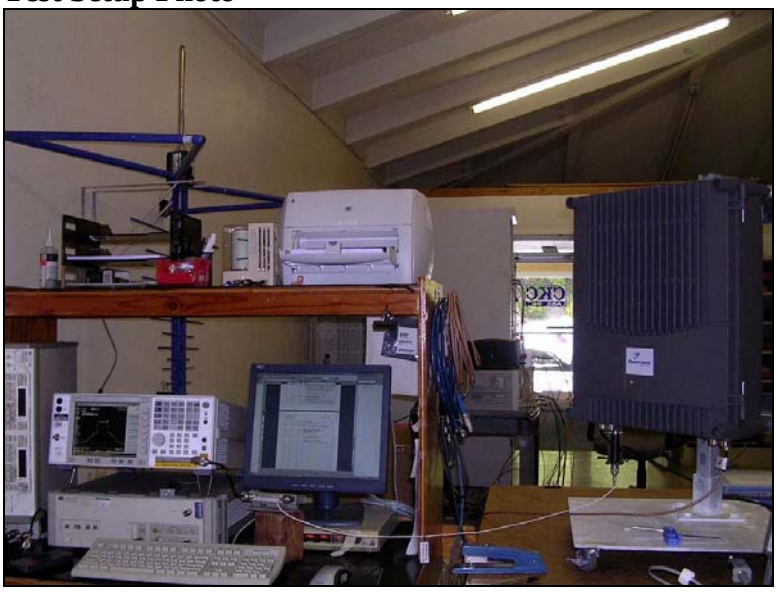


FCC PART 90 BANDEDGE PLOTS

Test Equipment

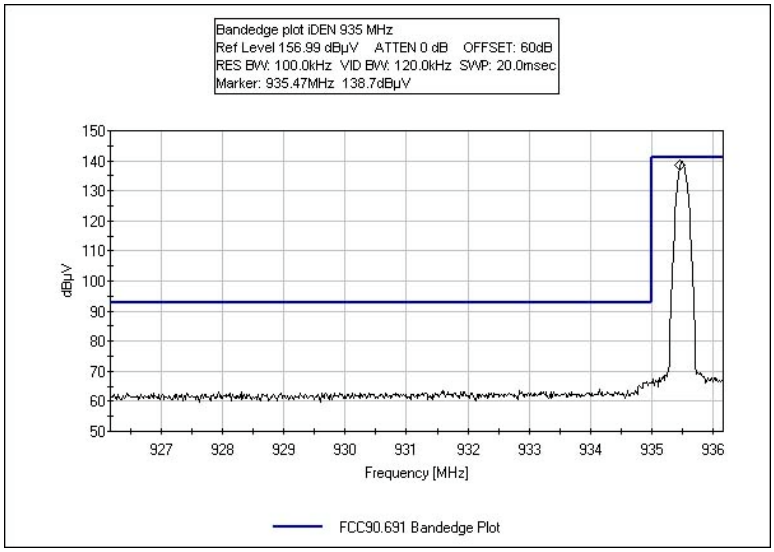
Equipment	Asset #	Manufacturer	Model	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	010307	010309
24" SMA Cable (White)	P05204	Pasterneck	35591-48	1-40GHz_white	011107	011109

Test Setup Photo

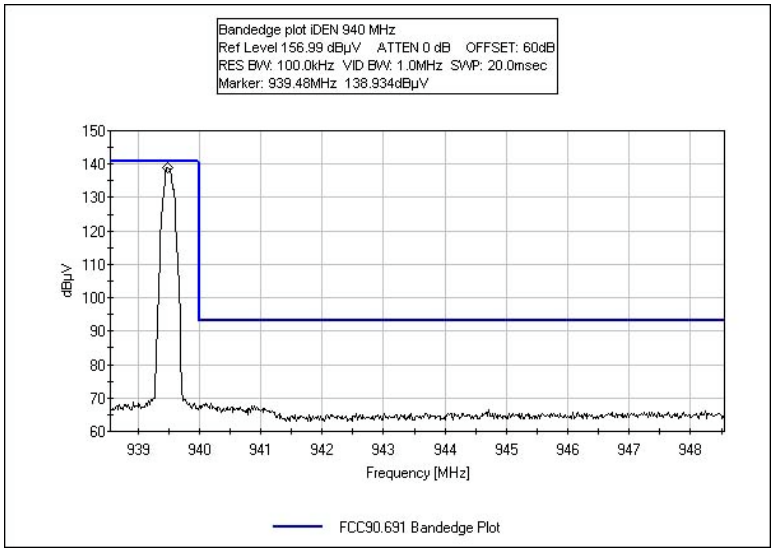


Test Conditions: The EUT is placed on the wooden table. RF Input port is connected to a remote support signal amplifier and a signal generator. The RF Output is connected to a remote RF load and a directional coupler. The RF power of the EUT is monitored at the output of the directional coupler and the RF input signal is adjusted to maintain the output power. Evaluation performed at the antenna port.

FCC PART 90 BANDEDGE PLOT - iDEN 935 MHz



FCC PART 90 BANDEDGE PLOT - iDEN 940 MHz



FCC 15.107 – AC CONDUCTED EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **FCC 15.107 Class B COND [AVE]**
Work Order #: **83894** Date: 3/30/2007
Test Type: **Conducted Emissions** Time: 13:15:31
Equipment: **RF Repeater** Sequence#: 2
Manufacturer: Powerwave Technologies Tested By: E. Wong
Model: AR 1200 110V 60Hz
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
LISN	1104	11/10/2006	11/10/2008	00847
6dB Attenuator	None	11/21/2006	11/21/2008	P05611
150kHz HPF	G7755	05/09/2006	05/09/2007	02610
Conducted Emission Cable	Cable #21	05/09/2006	05/09/2008	P04358
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table. RF in and RF out are connected to sections of shielded RF cable for termination purposes. Idle mode. 23°C, 62% relative humidity.

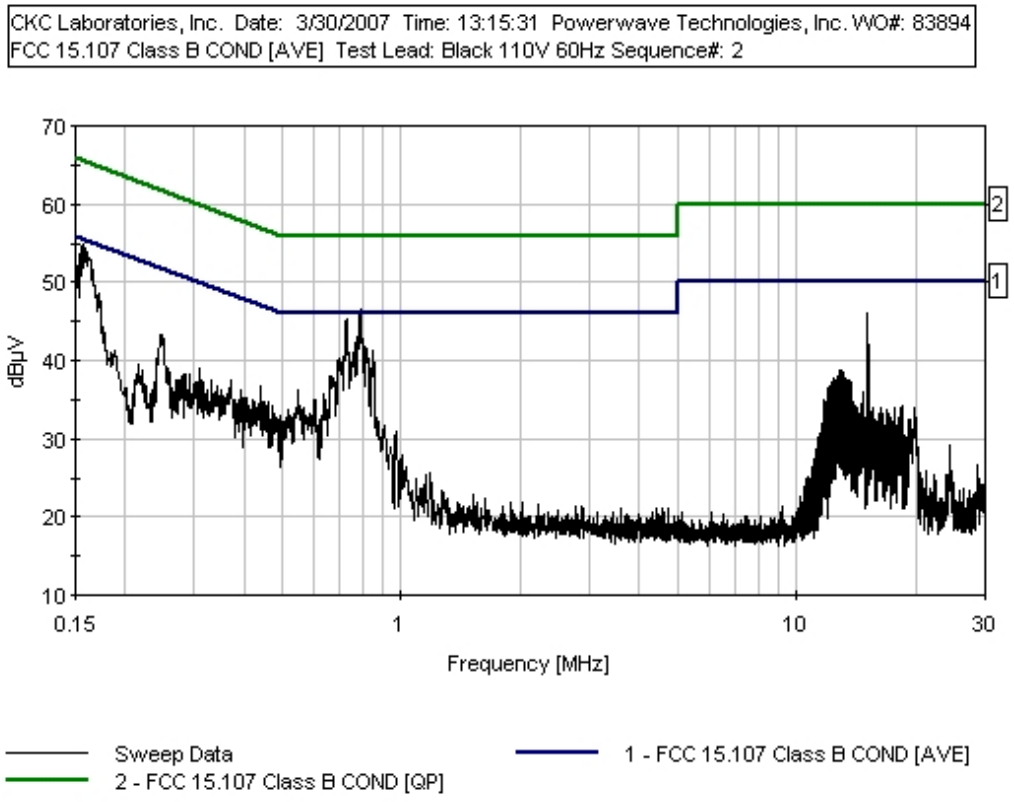
Transducer Legend:

T1=150kHz HPF Asset 02610	T2=6dB Attenuator P05611
T3=Cable #21 Conducted Site A 050908	T4=(L1) Insertion Loss 00847 EMCO 3816/2NM

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	15.157M	38.5	+0.2	+6.1	+0.4	+0.8	+0.0	46.0	50.0	-4.0	Black
2	788.487k Ave	35.2	+0.1	+6.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	Black
^	788.487k	40.1	+0.1	+6.1	+0.1	+0.1	+0.0	46.5	46.0	+0.5	Black
4	818.302k	35.0	+0.1	+6.1	+0.1	+0.1	+0.0	41.4	46.0	-4.6	Black
5	848.845k	35.0	+0.1	+6.1	+0.0	+0.1	+0.0	41.3	46.0	-4.7	Black
6	695.405k	33.8	+0.2	+6.1	+0.1	+0.1	+0.0	40.3	46.0	-5.7	Black

7	727.575k Ave	32.5	+0.1	+6.1	+0.1	+0.1	+0.0	38.9	46.0	-7.1	Black
^	727.575k	38.7	+0.1	+6.1	+0.1	+0.1	+0.0	45.1	46.0	-0.9	Black
9	661.226k	31.6	+0.2	+6.1	+0.1	+0.1	+0.0	38.1	46.0	-7.9	Black
10	151.618k Ave	38.5	+2.3	+6.2	+0.1	+0.1	+0.0	47.2	55.9	-8.7	Black
11	151.454k Ave	38.4	+2.3	+6.2	+0.1	+0.1	+0.0	47.1	55.9	-8.8	Black
^	151.454k	48.0	+2.3	+6.2	+0.1	+0.1	+0.0	56.7	55.9	+0.8	Black
^	151.618k	47.3	+2.3	+6.2	+0.1	+0.1	+0.0	56.0	55.9	+0.1	Black
^	151.454k	43.3	+2.3	+6.2	+0.1	+0.1	+0.0	52.0	55.9	-3.9	Black
15	12.860M	31.5	+0.2	+6.1	+0.4	+0.6	+0.0	38.8	50.0	-11.2	Black
16	12.977M	31.3	+0.2	+6.1	+0.4	+0.7	+0.0	38.7	50.0	-11.3	Black
17	13.094M	31.2	+0.2	+6.1	+0.4	+0.7	+0.0	38.6	50.0	-11.4	Black
18	12.734M	30.8	+0.2	+6.1	+0.4	+0.6	+0.0	38.1	50.0	-11.9	Black
19	12.364M	30.4	+0.2	+6.1	+0.4	+0.6	+0.0	37.7	50.0	-12.3	Black
20	13.220M	30.3	+0.2	+6.1	+0.4	+0.7	+0.0	37.7	50.0	-12.3	Black


CKC Laboratories, Inc. Date: 3/30/2007 Time: 13:15:31 Powerwave Technologies, Inc. WO#: 83894
FCC 15.107 Class B COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 2
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 Class B COND [QP]
1 - FCC 15.107 Class B COND [AVE]

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 15.107 Class B COND [AVE]**		
Work Order #:	**83894**	Date:	3/30/2007
Test Type:	**Conducted Emissions**	Time:	13:22:59
Equipment:	**RF Repeater**	Sequence#:	3
Manufacturer:	Powerwave Technologies	Tested By:	E. Wong
Model:	AR 1200		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
LISN	1104	11/10/2006	11/10/2008	00847
6dB Attenuator	None	11/21/2006	11/21/2008	P05611
150kHz HPF	G7755	05/09/2006	05/09/2007	02610
Conducted Emission Cable	Cable #21	05/09/2006	05/09/2008	P04358
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table. RF in and RF out are connected to sections of shielded RF cable for termination purposes. Idle mode. 23°C, 62% relative humidity.

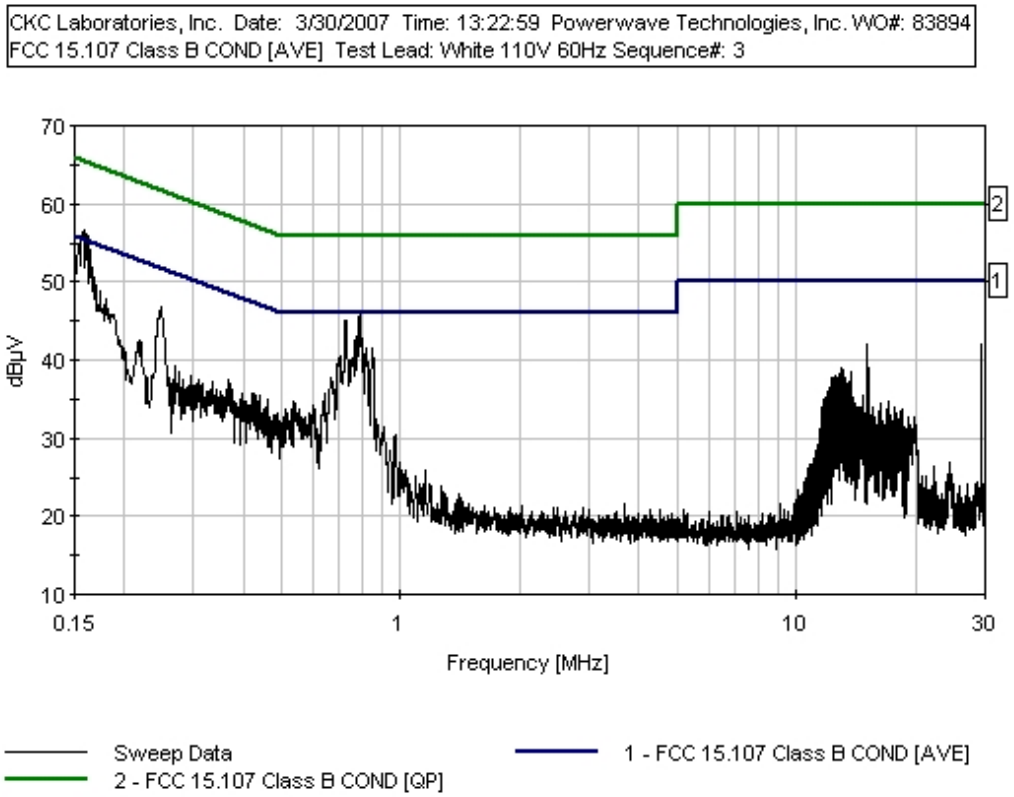
Transducer Legend:

T1=150kHz HPF Asset 02610	T2=6dB Attenuator P05611
T3=Cable #21 Conducted Site A 050908	T4=(L2) Insertion Loss 00847 EMCO 3816/2NM

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	166.726k	44.9	+0.5	+6.2	+0.1	+0.2	+0.0	51.9	55.1	-3.2	White
2	788.214k Ave	35.2	+0.1	+6.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	White
^	788.214k	41.3	+0.1	+6.1	+0.1	+0.1	+0.0	47.7	46.0	+1.7	White
4	817.575k	35.2	+0.1	+6.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	White
5	848.118k	35.2	+0.1	+6.1	+0.0	+0.1	+0.0	41.5	46.0	-4.5	White
6	150.726k Ave	42.3	+2.5	+6.2	+0.1	+0.2	+0.0	51.3	56.0	-4.7	White
7	248.173k	40.2	+0.2	+6.1	+0.1	+0.1	+0.0	46.7	51.8	-5.1	White

8	152.090k Ave	42.0	+2.2	+6.2	+0.1	+0.2	+0.0	50.7	55.9	-5.2	White
^	152.090k	50.1	+2.2	+6.2	+0.1	+0.2	+0.0	58.8	55.9	+2.9	White
^	150.726k	49.6	+2.5	+6.2	+0.1	+0.2	+0.0	58.6	56.0	+2.6	White
11	727.337k Ave	32.3	+0.1	+6.1	+0.1	+0.1	+0.0	38.7	46.0	-7.3	White
^	727.337k	39.5	+0.1	+6.1	+0.1	+0.1	+0.0	45.9	46.0	-0.1	White
13	15.157M	34.6	+0.2	+6.1	+0.4	+0.8	+0.0	42.1	50.0	-7.9	White
14	29.472M	33.6	+0.3	+6.2	+0.5	+1.4	+0.0	42.0	50.0	-8.0	White
15	667.771k	31.3	+0.2	+6.1	+0.1	+0.1	+0.0	37.8	46.0	-8.2	White
16	218.357k	36.0	+0.2	+6.1	+0.1	+0.2	+0.0	42.6	52.9	-10.3	White
17	641.591k	29.2	+0.2	+6.1	+0.1	+0.1	+0.0	35.7	46.0	-10.3	White
18	12.977M	31.7	+0.2	+6.1	+0.4	+0.7	+0.0	39.1	50.0	-10.9	White



FCC 15.109 – RADIATED EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **FCC 15.109 Class B**
Work Order #: **83894** Date: 3/30/2007
Test Type: **Radiated Scan** Time: 10:53:09
Equipment: **RF Repeater** Sequence#: 1
Manufacturer: Powerwave Technologies Tested By: E. Wong
Model: AR 1200
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	02/02/2006	02/02/2008	01995
Spectrum Analyzer	US44300438	01/03/2007	01/03/2009	02672
Pre amp to SA Cable	Cable #10	05/16/2005	05/16/2007	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309

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

Function	Manufacturer	Model #	S/N
RF Repeater*	Powerwave Technologies	AR 1200	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table. RF in and RF out are connected to sections of shielded RF cable for termination purposes. Idle mode. 23°C, 62% relative humidity.

Transducer Legend:

T1=Preamp 8447D 060108	T2=Bilog AN01995 020208 Chase
T3=Cable #10 051607	T4=Cable #15, Site A, 010509

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	239.789M	51.6	-27.7	+11.8	+0.2	+2.8	+0.0	38.7	46.0	-7.3	Vert
2	223.858M	50.6	-27.6	+10.7	+0.2	+2.7	+0.0	36.6	46.0	-9.4	Horiz
3	247.792M	47.7	-27.7	+12.4	+0.2	+2.9	+0.0	35.5	46.0	-10.5	Vert
4	225.725M	49.1	-27.6	+10.8	+0.2	+2.7	+0.0	35.2	46.0	-10.8	Vert
5	231.792M	48.1	-27.6	+11.2	+0.2	+2.8	+0.0	34.7	46.0	-11.3	Horiz
6	235.870M	47.8	-27.6	+11.5	+0.2	+2.8	+0.0	34.7	46.0	-11.3	Vert
7	204.617M	47.6	-27.6	+9.2	+0.2	+2.6	+0.0	32.0	43.5	-11.5	Horiz

8	227.808M	47.5	-27.6	+11.0	+0.2	+2.7	+0.0	33.8	46.0	-12.2	Horiz
9	237.683M	46.3	-27.7	+11.7	+0.2	+2.8	+0.0	33.3	46.0	-12.7	Vert
10	367.700M	41.8	-27.7	+15.0	+0.3	+3.6	+0.0	33.0	46.0	-13.0	Horiz
11	255.792M	44.7	-27.7	+12.6	+0.2	+2.9	+0.0	32.7	46.0	-13.3	Vert
12	363.700M	39.7	-27.7	+14.9	+0.3	+3.6	+0.0	30.8	46.0	-15.2	Vert
13	374.958M	39.0	-27.7	+15.2	+0.3	+3.6	+0.0	30.4	46.0	-15.6	Horiz
14	201.000M	43.1	-27.6	+8.9	+0.2	+2.6	+0.0	27.2	43.5	-16.3	Horiz
15	236.500M	42.3	-27.6	+11.6	+0.2	+2.8	+0.0	29.3	46.0	-16.7	Horiz
16	220.617M	43.6	-27.6	+10.4	+0.2	+2.7	+0.0	29.3	46.0	-16.7	Vert
17	367.708M	38.0	-27.7	+15.0	+0.3	+3.6	+0.0	29.2	46.0	-16.8	Vert
18	400.025M	36.4	-27.8	+15.8	+0.3	+3.7	+0.0	28.4	46.0	-17.6	Vert
19	207.317M	41.1	-27.6	+9.4	+0.2	+2.6	+0.0	25.7	43.5	-17.8	Vert
20	299.992M	36.6	-27.6	+13.2	+0.3	+3.2	+0.0	25.7	46.0	-20.3	Vert
21	375.000M	34.1	-27.7	+15.2	+0.3	+3.6	+0.0	25.5	46.0	-20.5	Vert
22	335.975M	35.1	-27.6	+14.2	+0.3	+3.4	+0.0	25.4	46.0	-20.6	Vert
23	379.683M	33.8	-27.7	+15.3	+0.3	+3.6	+0.0	25.3	46.0	-20.7	Vert
24	274.983M	34.2	-27.7	+12.9	+0.3	+3.0	+0.0	22.7	46.0	-23.3	Vert
25	351.683M	31.9	-27.6	+14.5	+0.3	+3.5	+0.0	22.6	46.0	-23.4	Vert
26	316.700M	32.9	-27.6	+13.7	+0.3	+3.3	+0.0	22.6	46.0	-23.4	Vert