



FCC PART 15 CLASS B

MEASUREMENT AND TEST REPORT

For

Linktop Technology Co., LTD.

2F Guangye Building, Torch Hi-Tech, Xiamen, Fujian, China

FCC ID: VH4LW273

Report Type: Original Report	Product Type: 3G USB Modem
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Report Number: <u>RSZ120208001-00</u>	
Report Date: <u>2012-02-20</u>	
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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk “★” (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Linktop Technology Co., LTD.*'s product, model number: *LW273 (FCC ID: VH4LW273)* (the "EUT") in this report was a *3G USB Modem*, which was measured approximately: 7.7 cm (L) x 3.0 cm (W) x 1.3 cm (H), rated input voltage: DC 5V from PC USB port.

** All measurement and test data in this report was gathered from production sample serial number: 451012020024 (Assigned by Applicant). The EUT was received on 2012-02-08.*

Objective

This report is prepared on behalf of *Linktop Technology Co., LTD.* in accordance with Part 2- Subpart J, Part 15- Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 Class B.

Related Submittal(s)/Grant(s)

FCC Part 22H&24E PCB submissions with FCC ID: VH4LW273.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical mode which is provided by manufacturer.

EUT Exercise Software

Winthraw.exercise software was provided by BACL

Equipment Modifications

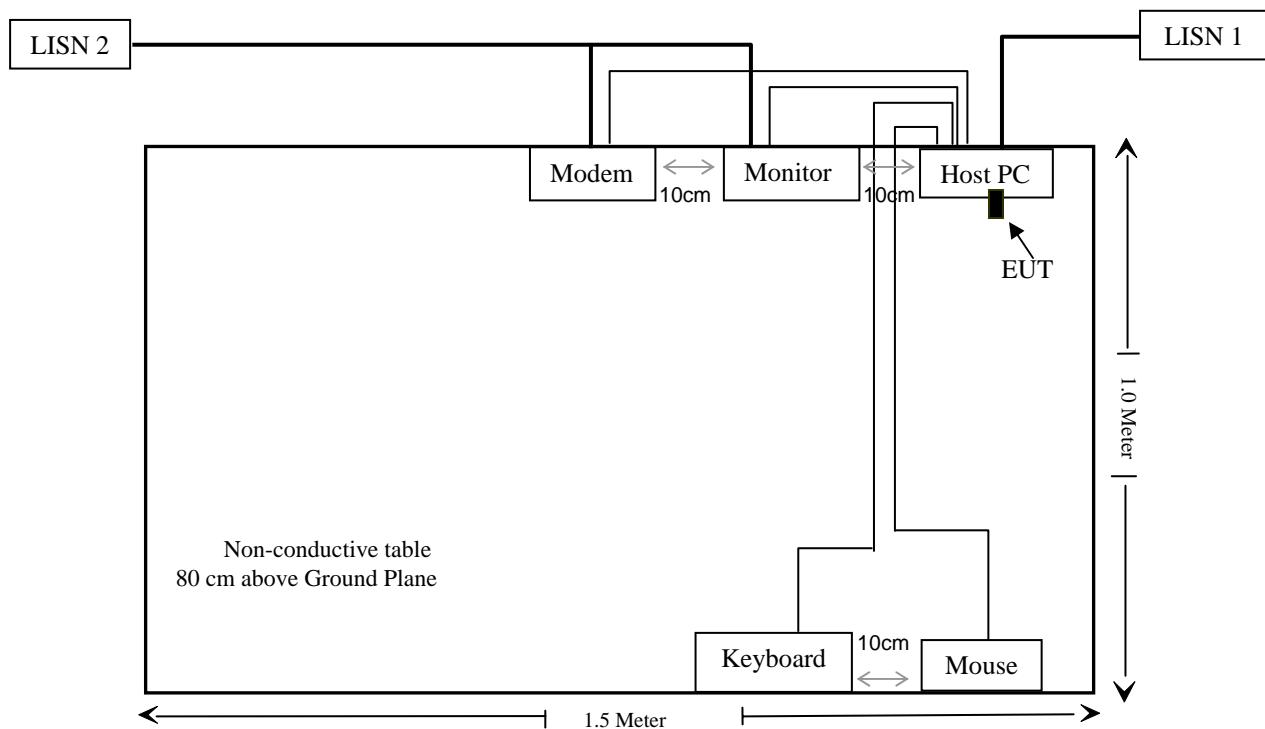
No modification was made to the EUT tested.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	PC	GX280	---
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
AST	Modem	AEM-2100	0293

External I/O Cable

Cable Description	Length (M)	From/Port	To
Shielded Detachable K/B Cable	1.5	K/B Port/Host PC	Keyboard
Shielded Detachable Mouse Cable	1.5	Mouse Port/Host PC	Mouse
Shielded Detachable VGA Cable	1.5	VGA Port/Host PC	Monitor
Unshielded Detachable Cable	1.0	Host PC	LISN
Shielded Detachable Serial Cable	1.2	Serial Port/Host	Modem

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

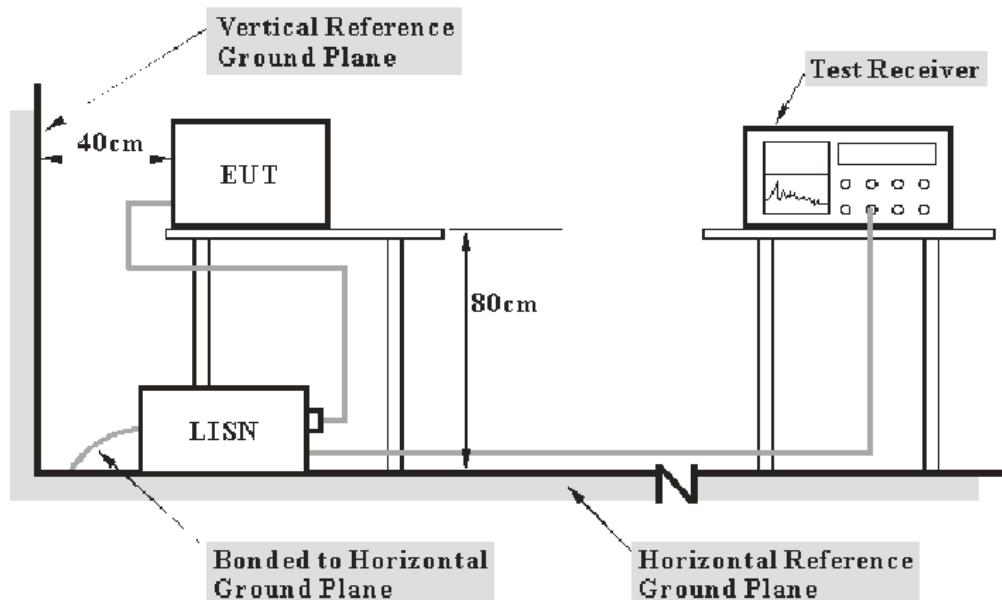
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 2.4 dB.(k=2, 95% level of confidence)

EUT Setup



Note:

1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<u>Frequency Range</u>	<u>IF B/W</u>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2011-07-08	2012-07-07
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the host PC was connected to the outlet of the first LISN, the monitor and modem were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the [FCC Part 15.107](#), with the worst margin reading of:

6.36 dB at 10.465 MHz in the Neutral conducted mode

Test Data

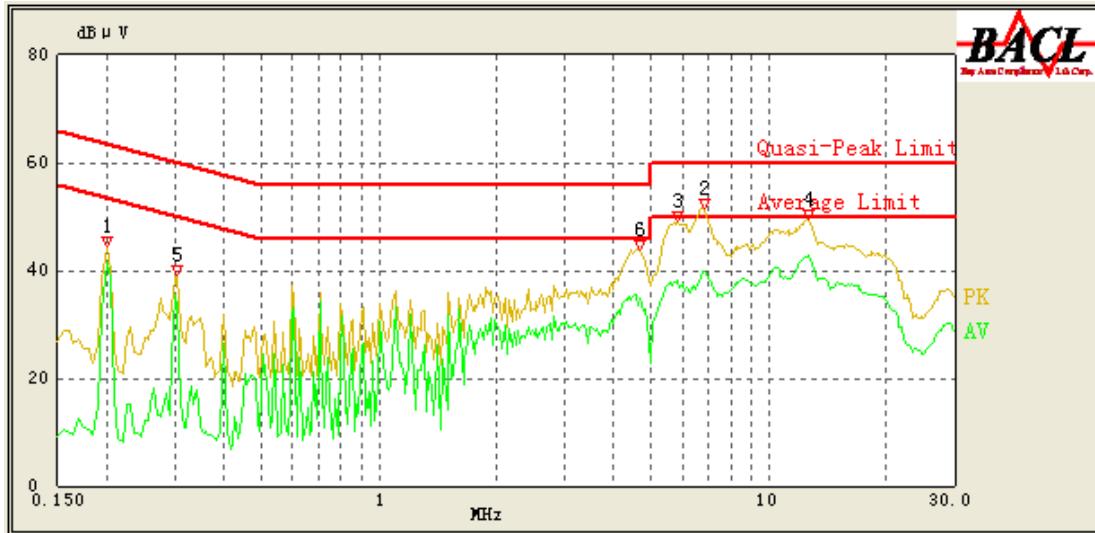
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Eric Lee on 2012-02-16.

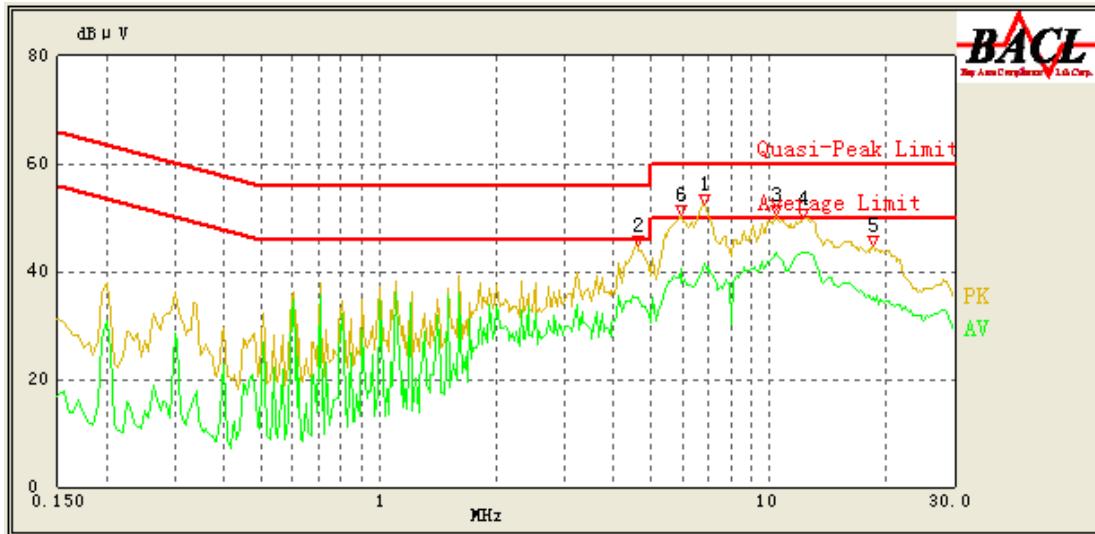
EUT Operation Mode: Data transmitting

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Detector (PK/ QP/Ave.)
12.660	42.78	10.02	50.00	7.22	Ave.
6.885	39.63	9.98	50.00	10.37	Ave.
4.665	34.75	9.97	46.00	11.25	Ave.
5.860	38.08	9.97	50.00	11.92	Ave.
0.200	41.57	9.96	54.57	13.00	Ave.
6.825	46.56	9.98	60.00	13.44	QP
12.660	43.79	10.02	60.00	16.21	QP
5.805	43.68	9.97	60.00	16.32	QP
0.305	33.66	9.96	51.57	17.91	Ave.
4.665	37.54	9.97	56.00	18.46	QP
0.200	42.21	9.96	64.57	22.36	QP
0.305	34.99	9.96	61.57	26.58	QP

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Detector (PK/ QP/Ave.)
10.465	43.64	10.00	50.00	6.36	Ave.
12.220	43.58	10.02	50.00	6.42	Ave.
6.840	41.48	9.98	50.00	8.52	Ave.
5.935	40.40	9.97	50.00	9.60	Ave.
4.630	35.03	9.97	46.00	10.97	Ave.
6.840	47.41	9.98	60.00	12.59	QP
5.935	46.73	9.97	60.00	13.27	QP
18.510	35.21	10.06	50.00	14.79	Ave.
10.465	44.77	10.00	60.00	15.23	QP
12.220	43.92	10.02	60.00	16.08	QP
4.630	39.81	9.97	56.00	16.19	QP
18.615	37.72	10.06	60.00	22.28	QP

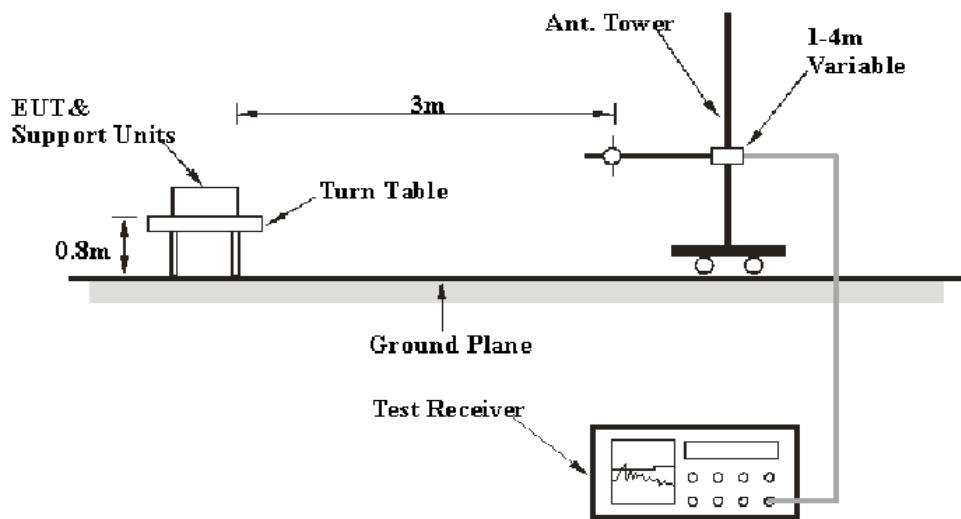
FCC §15.109 - RADIATED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. (k=2, 95% level of confidence)

EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency</i>	<i>RB/W</i>	<i>VB/W</i>	<i>IF B/W</i>	<i>Detection</i>
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz	Quasi-peak

Test Procedure

During the radiated emissions test, the host PC, monitor and modem were connected to AC floor outlet

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode from 30 MHz to 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2011-08-02	2012-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp (Shenzhen). attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

9.6 dB at 497.671250 MHz in the Vertical polarization

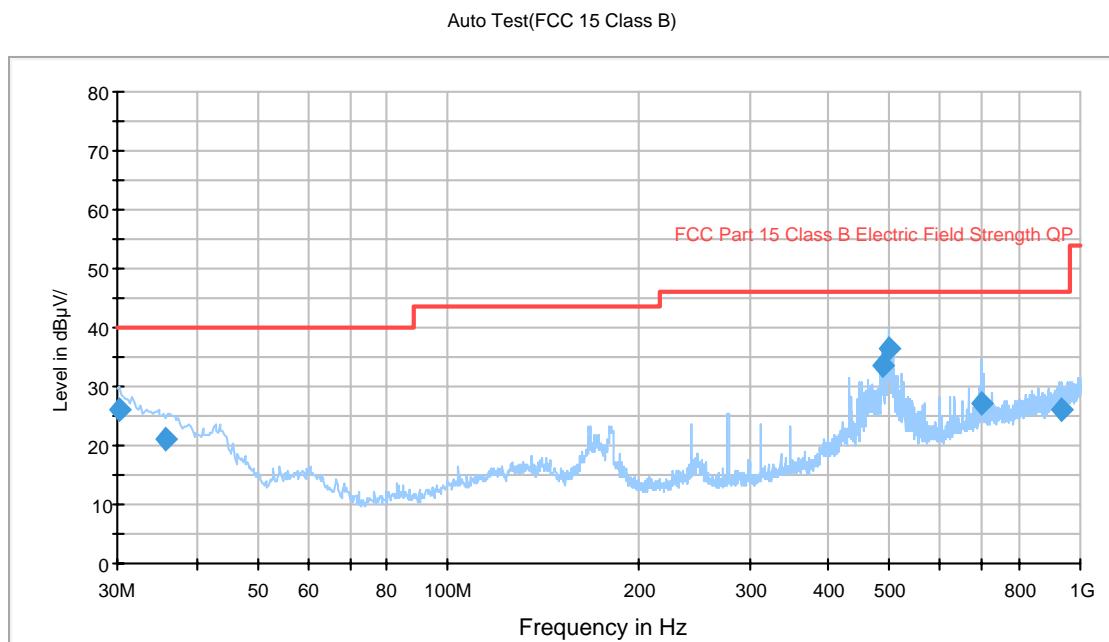
Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Eric Lee on 2012-02-16.

EUT Operation Mode: Data transmitting



Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Ant. Polarity	Turntable Position (deg)	Correction Factor (dB)	Limit (dB μ V/m)	Margin (dB)
497.671250	36.4	158.0	V	264.0	-8.4	46.0	9.6
487.262250	33.6	104.0	V	280.0	-8.6	46.0	12.4
30.200289	26.0	104.0	V	7.0	-5.5	40.0	14.0
35.890250	21.1	104.0	V	59.0	-9.4	40.0	18.9
699.747750	27.0	344.0	V	291.0	-3.1	46.0	19.0
931.612500	26.0	104.0	H	332.0	0.2	46.0	20.0

***** END OF REPORT *****