

*FCC PART 15, SUBPART B and C
TEST REPORT**for***TRUCK TRANSMITTER****MODEL: TT-1**

Prepared for

**COPAR CORPORATION
5744 WEST 77TH STREET
BURBANK, ILLINOIS 60459-1305**

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

MICHAEL CHRISTENSEN**COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500**

DATE: NOVEMBER 1, 2004

	REPORT BODY	APPENDICES					TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested: Truck Transmitter
Model: TT-1
S/N: N/A

Product Description: See Expository Statement

Modifications: The EUT was not modified in order to meet the specifications.

Manufacturer: Copar Corporation
5744 West 77th Street
Burbank, Illinois 60459-1305

Test Dates: October 12, 27, and 28, 2004

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.207, 15.209 and 15.249

Test Procedure: ANSI C63.4

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	This test was not performed because the EUT operates on 12 volts DC only and will never be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz - 9300 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Truck Transmitter Model: TT-1. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.249.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Copar Corporation

John J. Doczy Engineering Manager

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer
Benigno Chavez Test Technician
Michael Christensen Lab Manager

2.4 Date Test Sample was Received

The test sample was received on October 11, 2004

2.5 Disposition of the Test Sample

The sample has not yet been returned to Copar Corporation as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2003	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description Of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The Truck Transmitter Model: TT-1 (EUT) was connected to the Truck Receiver. The Truck Receiver was also connected to a DC power supply via its power port. The EUT was continuously transmitting and the Truck Receiver was continuously receiving.

The antenna is hard wired to the PCB.

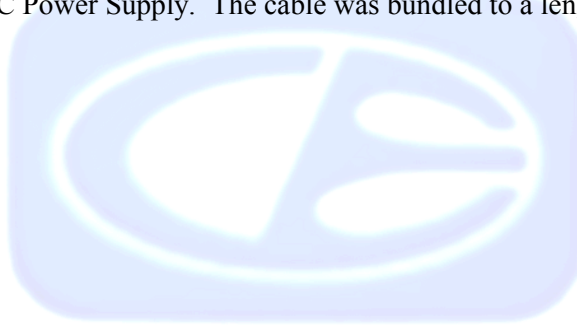
Since the EUT is user adjustable by having the end user take the front cover off the EUT and adjust the output with a potentiometer, the radiated emissions were taken with the EUT at the minimum and maximum power outputs.

The final radiated data was taken in the mode above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 3 meter unshielded cable connecting the EUT (Transmitter) to the Truck Receiver. It has a 3 pin Bulgin connector at each end. The cable was bundled to a length of 1 meter.

Cable 2 This is a 2 meter unshielded cable connecting the Truck Receiver to the DC Power Supply. It has a ¼ inch power connector at the Truck Receiver end and is hard wired into the plus and minus terminals of the DC Power Supply. The cable was bundled to a length of 1 meter.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
TRUCK TRANSMITTER (EUT)	COPAR CORPORATION	TT-1	N/A	SMOTT1
TRUCK RECEIVER	COPAR CORPORATION	TR-1	N/A	DoC
DC POWER SUPPLY	HEWLETT PACKARD	E3612A	KR2200610	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Radiated Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	June 24, 2004	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	June 24, 2004	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2004	1 Year
EMI Receiver	Rhode & Schwarz	ESIB40	100194	November 24, 2003	1 Year
Preamplifier	Com-Power	PA-102	1017	January 6, 2004	1 Year
Biconical Antenna	Com Power	AB-900	15227	April 21, 2004	1 Year
Log Periodic Antenna	Com Power	AL-100	16203	February 18, 2004	1 Year
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Loop Antenna	Com-Power	AL-130	17089	September 3, 2004	1 Year
Horn Antenna	Antenna Research	DRG-118/A	1053	January 16, 2004	1 Year
Microwave Preamplifier	Com-Power	PA-122	25195	August 19, 2004	1 Year

6. TEST SITE DESCRIPTION

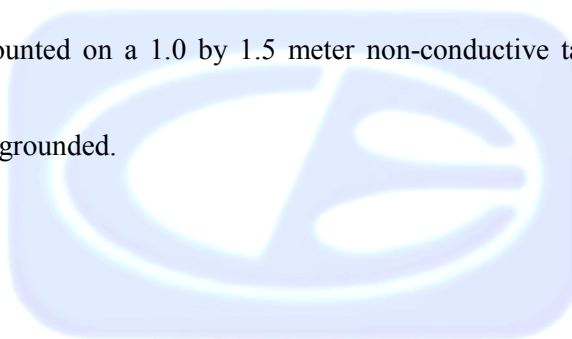
6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.



7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT operates on 12 volts DC only and will never be plugged into the AC public mains.

7.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com-Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 9.3 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

8. CONCLUSIONS

The Truck Transmitter Model: TT-1 meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.



APPENDIX A***LABORATORY RECOGNITIONS***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

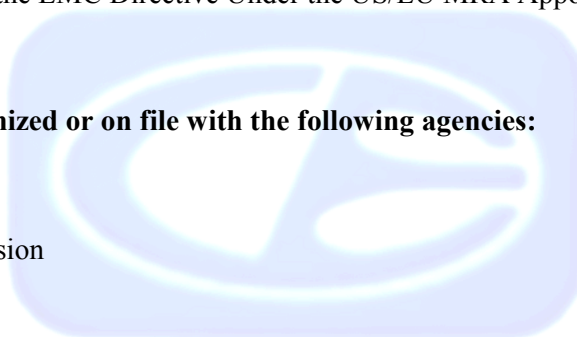
Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)



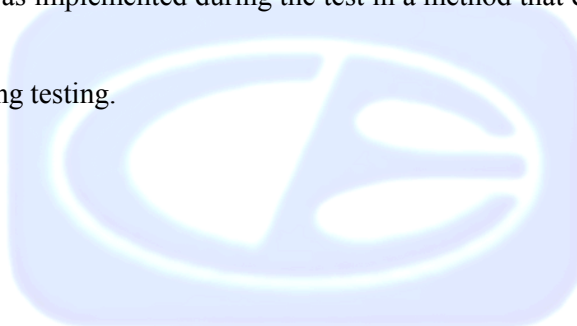
APPENDIX B***MODIFICATIONS TO THE EUT***

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 or FCC Class B specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made during testing.





APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Truck Transmitter
Model: TT-1
S/N: N/A

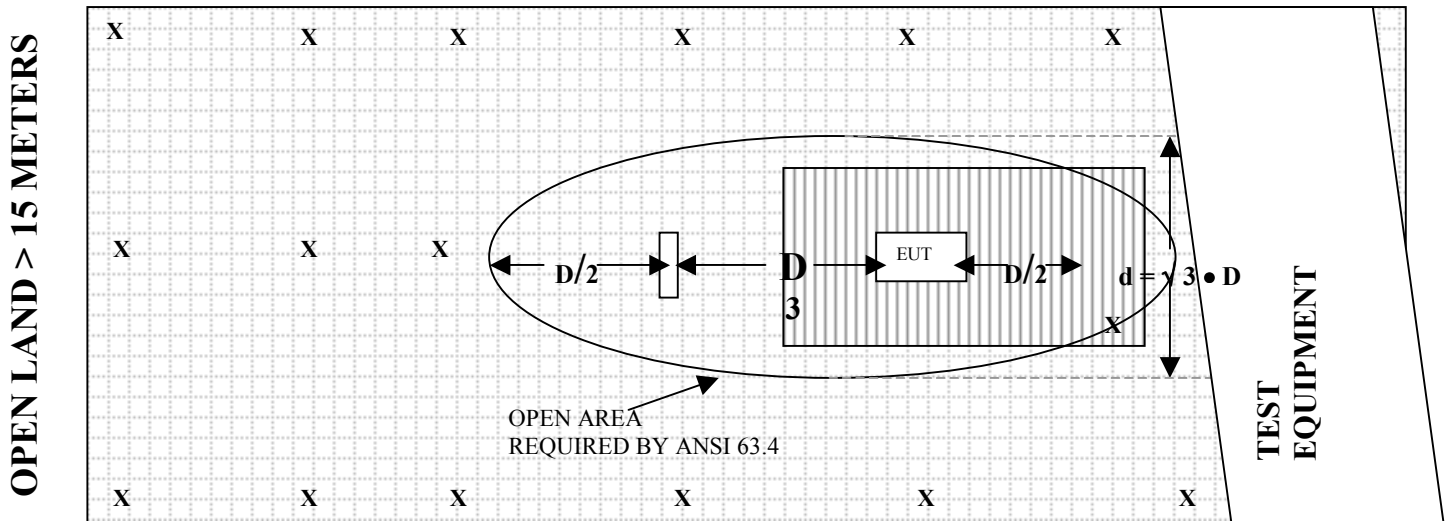
There were no additional models covered under this report.



APPENDIX D***DIAGRAMS, CHARTS, AND PHOTOS***

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER

COM-POWER AB-900**BICONICAL ANTENNA****S/N: 15227****CALIBRATION DATE: APRIL 21, 2004**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	12.50
35	10.90	125	12.90
40	11.40	140	12.40
45	8.90	150	12.10
50	11.40	160	12.40
60	10.30	175	15.80
70	8.20	180	15.70
80	6.00	200	17.40
90	7.60	250	14.60
100	10.50	300	19.50

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16203

CALIBRATION DATE: FEBRUARY 18, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.00	700	19.40
400	15.10	800	21.30
500	16.70	900	20.70
600	18.70	1000	22.60

COM-POWER PA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 6, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	37.8	300	37.6
40	37.5	350	37.5
50	37.7	400	37.5
60	37.5	450	37.0
70	37.5	500	37.1
80	37.5	550	37.3
90	37.5	600	37.1
100	37.5	650	37.4
125	37.8	700	37.1
150	37.5	750	37.1
175	37.5	800	36.8
200	37.6	850	36.2
225	37.6	900	36.7
250	37.5	950	36.2
275	37.6	1000	35.3

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	30.50	6.0	30.57
1.1	30.24	6.5	30.39
1.2	30.44	7.0	30.08
1.3	30.38	7.5	29.92
1.4	30.11	8.0	28.88
1.5	29.91	8.5	28.08
1.6	29.74	9.0	28.08
1.7	30.26	9.5	29.11
1.8	30.41	10.0	30.21
1.9	30.19	11.0	29.00
2.0	30.37	12.0	29.10
2.5	30.69	13.0	29.77
3.0	31.63	14.0	28.67
3.5	31.61	15.0	29.72
4.0	31.46	16.0	30.54
4.5	31.45	17.0	30.05
5.0	31.33	18.0	28.47
5.5	31.15		

ANTENNA RESEARCH DRG-118/A**HORN ANTENNA**

S/N: 1053

CALIBRATION DATE: JANUARY 16, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.4	10.0	38.7
1.5	25.2	10.5	39.0
2.0	28.2	11.0	38.9
2.5	28.5	11.5	41.3
3.0	30.1	12.0	40.5
3.5	31.0	12.5	40.0
4.0	31.2	13.0	40.2
4.5	31.9	13.5	40.5
5.0	33.2	14.0	41.6
5.5	33.7	14.5	44.8
6.0	34.3	15.0	41.4
6.5	35.0	15.5	39.2
7.0	36.7	16.0	39.4
7.5	37.3	16.5	40.9
8.0	37.1	17.0	42.6
8.5	37.3	17.5	45.1
9.0	37.7	18.0	41.7
9.5	38.6		

COM-POWER AL-130**LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: SEPTEMBER 3, 2004

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.8	10.7
0.01	-40.9	10.6
0.02	-41.8	9.7
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.7	9.8
0.2	-44.1	7.4
0.3	-41.6	9.9
0.5	-41.5	10.0
0.7	-41.4	10.1
1	-41.0	10.5
2	-40.6	10.9
3	-40.8	10.7
4	-41.0	10.5
5	-40.4	11.1
10	-40.7	10.8
15	-41.6	9.9
20	-41.3	10.2
25	-43.0	8.5
30	-42.6	8.9



FRONT VIEW

COPAR CORPORATION
TRUCK TRANSMITTER
MODEL: TT-1
LAB B

FCC SUBPART B AND SUBPART C – RADIATED EMISSIONS – 10-27-04 and 10-28-04

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400



REAR VIEW

COPAR CORPORATION
TRUCK TRANSMITTER
MODEL: TT-1
LAB B

FCC SUBPART B AND SUBPART C – RADIATED EMISSIONS – 10-27-04 and 10-28-04

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400



FRONT VIEW

**COPAR CORPORATION
TRUCK TRANSMITTER
MODEL: TT-1
LAB D**

FCC SUBPART B AND SUBPART C – RADIATED EMISSIONS – 10-12-04, 10-27-04, and 10-28-04

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

**Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500**

**Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600**

**Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700**

**Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400**



REAR VIEW

COPAR CORPORATION
TRUCK TRANSMITTER
MODEL: TT-1
LAB D

FCC SUBPART B AND SUBPART C – RADIATED EMISSIONS – 10-12-04, 10-27-04, and 10-28-04

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

COPAR Corp.

Date: 10/28/04

Truck Transmitter

Lab: B

Model: TT-1

Tested By: Benigno Chavez

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

X - Axis

Fundamental

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.44	34.59	V	94	-59.41	Peak	1.25	180	
916.44	40.39	H	94	-53.61	Peak	1.5	180	

FCC 15.249

COPAR Corp.

Date: 10/28/04

Truck Transmitter

Lab: B

Model: TT-1

Tested By: Benigno Chavez

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

Y - Axis

Fundamental

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.5	40.79	V	94	-53.21	Peak	1	180	
916.5	31.5	H	94	-62.5	Peak	1.5	180	

FCC 15.249

COPAR Corp.
Truck Transmitter
Model: TT-1
S/N: N/A

Date: 10/28/04
Lab: B
Tested By: Benigno Chavez

Configuration -- Continuous Transmit Mode -- Minimum Output

Z - Axis

Fundamental

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.5	35.89	V	94	-58.11	Peak	1.25	90	
916.5	41.99	H	94	-52.01	Peak	1.5	180	

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

X - Axis**Duty Cycle = 75.4%**

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		V	74	-74	Peak			NO EMISSION
1833		V	54	-54	Avg			DETECTED
2749.5		V	74	-74	Peak			NO EMISSION
2749.5		V	54	-54	Avg			DETECTED
3666		V	74	-74	Peak			NO EMISSION
3666		V	54	-54	Avg			DETECTED
4582.5		V	74	-74	Peak			NO EMISSION
4582.5		V	54	-54	Avg			DETECTED
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

Y - Axis

Duty Cycle = 75.4%

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		V	74	-74	Peak			NO EMISSION
1833		V	54	-54	Avg			DETECTED
2749.5		V	74	-74	Peak			NO EMISSION
2749.5		V	54	-54	Avg			DETECTED
3666		V	74	-74	Peak			NO EMISSION
3666		V	54	-54	Avg			DETECTED
4582.5		V	74	-74	Peak			NO EMISSION
4582.5		V	54	-54	Avg			DETECTED
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

Z - Axis**Duty Cycle = 75.4%**

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		V	74	-74	Peak			NO EMISSION
1833		V	54	-54	Avg			DETECTED
2749.5		V	74	-74	Peak			NO EMISSION
2749.5		V	54	-54	Avg			DETECTED
3666		V	74	-74	Peak			NO EMISSION
3666		V	54	-54	Avg			DETECTED
4582.5		V	74	-74	Peak			NO EMISSION
4582.5		V	54	-54	Avg			DETECTED
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

X - Axis**Duty Cycle = 75.4%**

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		H	74	-74	Peak			NO EMISSION
1833		H	54	-54	Avg			DETECTED
2749.5		H	74	-74	Peak			NO EMISSION
2749.5		H	54	-54	Avg			DETECTED
3666		H	74	-74	Peak			NO EMISSION
3666		H	54	-54	Avg			DETECTED
4582.5		H	74	-74	Peak			NO EMISSION
4582.5		H	54	-54	Avg			DETECTED
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

Y - Axis**Duty Cycle = 75.4%**

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		H	74	-74	Peak			NO EMISSION
1833		H	54	-54	Avg			DETECTED
2749.5		H	74	-74	Peak			NO EMISSION
2749.5		H	54	-54	Avg			DETECTED
3666		H	74	-74	Peak			NO EMISSION
3666		H	54	-54	Avg			DETECTED
4582.5		H	74	-74	Peak			NO EMISSION
4582.5		H	54	-54	Avg			DETECTED
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Minimum Output

Z - Axis**Duty Cycle = 75.4%**

Date: 10/28/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833		H	74	-74	Peak			NO EMISSION
1833		H	54	-54	Avg			DETECTED
2749.5		H	74	-74	Peak			NO EMISSION
2749.5		H	54	-54	Avg			DETECTED
3666		H	74	-74	Peak			NO EMISSION
3666		H	54	-54	Avg			DETECTED
4582.5		H	74	-74	Peak			NO EMISSION
4582.5		H	54	-54	Avg			DETECTED
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.
Truck Transmitter
Model: TT-1
S/N: N/A

Date: 10/27/04
Lab: B
Tested By: Benigno Chavez

Configuration -- Continuous Transmit Mode -- Maximum output

X - Axis

Fundamental

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.44	79.29	V	94	-14.71	Peak	1	0	
916.44	84.39	H	94	-9.61	Peak	1	180	

FCC 15.249

COPAR Corp.
Truck Transmitter
Model: TT-1
S/N: N/A

Date: 10/27/04
Lab: B
Tested By: Benigno Chavez

Configuration -- Continuous Transmit Mode -- Maximum output

Y - Axis

Fundamental

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.5	86.79	V	94	-7.21	Peak	1	180	
916.5	76.89	H	94	-17.11	Peak	1.5	180	

FCC 15.249

COPAR Corp.

Date: 10/27/04

Truck Transmitter

Lab: B

Model: TT-1

Tested By: Benigno Chavez

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

Z - Axis

Fundamental

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
916.5	78.62	V	94	-15.38	Peak	1.25	45	
916.5	85.09	H	94	-8.91	Peak	1.5	225	

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

X - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	48.41	V	74	-25.59	Peak	1.25	180	
1833	45.96	V	54	-8.04	Avg	1.25	180	
2749.5	44.86	V	74	-29.14	Peak	1.5	180	
2749.5	42.41	V	54	-11.59	Avg	1.5	180	
3666	55.04	V	74	-18.96	Peak	2	180	
3666	52.59	V	54	-1.41	Avg	2	180	
4582.5	52.35	V	74	-21.65	Peak	2.25	90	
4582.5	49.9	V	54	-4.1	Avg	2.25	90	
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

Y - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	53.94	V	74	-20.06	Peak	1.25	180	
1833	51.49	V	54	-2.51	Avg	1.25	180	
2749.5	51.44	V	74	-22.56	Peak	1.5	180	
2749.5	48.99	V	54	-5.01	Avg	1.5	180	
3666	54.61	V	74	-19.39	Peak	1.25	180	
3666	52.16	V	54	-1.84	Avg	1.25	180	
4582.5	50.44	V	74	-23.56	Peak	1.5	180	
4582.5	47.99	V	54	-6.01	Avg	1.5	180	
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

Z - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	50.65	V	74	-23.35	Peak	1	180	
1833	48.2	V	54	-5.8	Avg	1	180	
2749.5	48.76	V	74	-25.24	Peak	1.5	135	
2749.5	46.31	V	54	-7.69	Avg	1.5	135	
3666	51.96	V	74	-22.04	Peak	1.25	225	
3666	49.51	V	54	-4.49	Avg	1.25	225	
4582.5	52.88	V	74	-21.12	Peak	2.5	180	
4582.5	50.43	V	54	-3.57	Avg	2.5	180	
5499		V	74	-74	Peak			NO EMISSION
5499		V	54	-54	Avg			DETECTED
6415.5		V	74	-74	Peak			NO EMISSION
6415.5		V	54	-54	Avg			DETECTED
7332		V	74	-74	Peak			NO EMISSION
7332		V	54	-54	Avg			DETECTED
8248.5		V	74	-74	Peak			NO EMISSION
8248.5		V	54	-54	Avg			DETECTED
9165		V	74	-74	Peak			NO EMISSION
9165		V	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

X - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	47	H	74	-27	Peak	3	180	
1833	44.55	H	54	-9.45	Avg	3	180	
2749.5	44.92	H	74	-29.08	Peak	2	180	
2749.5	42.47	H	54	-11.53	Avg	2	180	
3666	48.92	H	74	-25.08	Peak	2.25	45	
3666	46.47	H	54	-7.53	Avg	2.25	45	
4582.5	49.67	H	74	-24.33	Peak	2.75	90	
4582.5	47.22	H	54	-6.78	Avg	2.75	90	
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

Y - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	51.4	H	74	-22.6	Peak	1.5	180	
1833	48.95	H	54	-5.05	Avg	1.5	180	
2749.5	49.03	H	74	-24.97	Peak	2.25	180	
2749.5	46.58	H	54	-7.42	Avg	2.25	180	
3666	52.22	H	74	-21.78	Peak	1	135	
3666	49.77	H	54	-4.23	Avg	1	135	
4582.5	52.05	H	74	-21.95	Peak	1	135	
4582.5	49.6	H	54	-4.4	Avg	1	135	
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

FCC 15.249

COPAR Corp.

Truck Transmitter

Model: TT-1

S/N: N/A

Configuration -- Continuous Transmit Mode -- Maximum output

Z - Axis**Duty Cycle = 75.4%**

Date: 10/27/04

Lab: B

Tested By: Benigno Chavez

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1833	52.73	H	74	-21.27	Peak	1	180	
1833	50.28	H	54	-3.72	Avg	1	180	
2749.5	50.73	H	74	-23.27	Peak	2	180	
2749.5	48.28	H	54	-5.72	Avg	2	180	
3666	54.68	H	74	-19.32	Peak	1	225	
3666	52.23	H	54	-1.77	Avg	1	225	
4582.5	49.16	H	74	-24.84	Peak	1	225	
4582.5	46.71	H	54	-7.29	Avg	1	225	
5499		H	74	-74	Peak			NO EMISSION
5499		H	54	-54	Avg			DETECTED
6415.5		H	74	-74	Peak			NO EMISSION
6415.5		H	54	-54	Avg			DETECTED
7332		H	74	-74	Peak			NO EMISSION
7332		H	54	-54	Avg			DETECTED
8248.5		H	74	-74	Peak			NO EMISSION
8248.5		H	54	-54	Avg			DETECTED
9165		H	74	-74	Peak			NO EMISSION
9165		H	54	-54	Avg			DETECTED

Test Location : Compatible Electronics
Customer : Copar Corporation
Manufacturer : Copar Corporation
Eut name : Truck Transmitter
Model : TT-1
Serial # : N/A
Specification : FCC Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : Spurious Emissions - 10 kHz to 9200 MHz
Vertical and Horizontal Polarization
EUT Tx Transmitting and EUT Rx Receiving
Tested By: Kyle Fujimoto

Page : 1/1
Date : 10/12/2004
Time : 9:24:33
Lab : D
Test Distance : 3.0 Meters

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1V	43.782	46.60	0.56	9.48	37.58	19.06	40.00	-20.94
2V	50.447	54.70	0.51	11.35	37.69	28.87	40.00	-11.13
3H	56.320	42.00	0.63	10.68	37.57	15.74	40.00	-24.26
4H	74.604	39.50	0.85	7.15	37.50	10.00	40.00	-30.00
5V	109.432	48.70	0.98	11.49	37.62	23.55	43.50	-19.95
6H	150.064	41.50	1.20	12.10	37.50	17.30	43.50	-26.20
7H	196.918	39.60	1.38	17.15	37.59	20.54	43.50	-22.96
8H	292.564	36.40	1.67	19.13	37.60	19.60	46.00	-26.40
9H	297.364	34.50	1.69	19.37	37.60	17.96	46.00	-28.04
10V	324.038	48.80	1.70	13.56	37.55	26.51	46.00	-19.49
11V	374.975	40.70	1.91	14.63	37.50	19.73	46.00	-26.27
12V	399.264	34.40	2.09	15.09	37.50	14.08	46.00	-31.92
13H	400.917	40.80	2.10	15.12	37.49	20.53	46.00	-25.47
14H	406.764	41.60	2.10	15.22	37.43	21.49	46.00	-24.51
15V	432.041	43.60	2.10	15.65	37.17	24.18	46.00	-21.82
16H	432.053	46.60	2.10	15.65	37.17	27.18	46.00	-18.82
17H	451.740	40.00	2.11	15.97	37.00	21.08	46.00	-24.92
18H	507.565	38.50	2.30	16.86	37.13	20.53	46.00	-25.47
19V	515.508	35.60	2.30	17.04	37.16	17.77	46.00	-28.23
20V	638.144	33.50	2.50	18.98	37.33	17.65	46.00	-28.35
21V	716.047	34.80	2.90	19.72	37.10	20.32	46.00	-25.68
22V	934.024	30.40	3.10	21.37	36.36	18.51	46.00	-27.49