



*FCC PART 15, SUBPART B AND C  
TEST METHOD: ANSI C63.4-1992*

*for*

900 MHz INDUSTRIAL CONTROLLER - Tx

Model: RE6900T

Prepared for

ROWE ELECTRONICS  
P.O. BOX 1301  
DES MOINES, IOWA 50305-1301

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KYLE FUJIMOTO

Approved by: *Scott McCutchan*

SCOTT McCUTCHAN

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DATE: NOVEMBER 12, 1999

|       | REPORT<br>BODY | APPENDICES |          |          |          | TOTAL |
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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 in any form unless done so in full with the written permission of Compatible Electronics.

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

Device Tested: 900 MHz Industrial Controller - Tx  
Model: RE6900T  
S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Rowe Electronics  
P.O. Box 1301  
Des Moines, Iowa 50305-1301

Test Date: November 11, 1999

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

Test Procedure: ANSI C63.4: 1992

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

## SUMMARY OF TEST RESULTS

| TEST | DESCRIPTION                              | RESULTS                                                                                                                                                                                                                                                                                                                                                |
|------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Conducted RF Emissions, 450 kHz - 30 MHz | This test was not performed because the battery charge circuit operates on a 7500 Hz oscillator and it disables the rest of the circuit when it is connected to the charging transformer. Only the battery charge circuit is operational when the charging transformer is plugged in, with all other functions (including the transmitter) turned off. |
| 2    | Radiated RF Emissions, 9 kHz - 4200 MHz  | Complies with the limits of CFR Title 47, Part 15, Subpart B and Subpart C, sections 15.205 and 15.249                                                                                                                                                                                                                                                 |

## 1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the 900 MHz Industrial Controller - Tx Model: RE6900T. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. 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 specification limits defined by CFR Title 47, Part 15, Subpart B and Subpart C, sections 15.205 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

Rowe Electronics

|                |           |
|----------------|-----------|
| Rick McIntosh  | Engineer  |
| Steven D. Rowe | President |

Compatible Electronics Inc.

|                 |               |
|-----------------|---------------|
| Kyle Fujimoto   | Test Engineer |
| Scott McCutchan | Lab Manager   |

### 2.4 Date Test Sample was Received

The test sample was received on November 10, 1999

### 2.5 Disposition of the Test Sample

The test sample was returned to Rowe Electronics on November 12, 1999.

### 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,<br>Subpart C. | FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators                                               |
| ANSI C63.4<br>1992          | 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 900 MHz Industrial Controller - Tx Model: RE6900T (EUT) was tested as a stand alone unit. The EUT is powered by two internal batteries. The EUT was tested in three orthogonal axis and was transmitting data on a continuous basis. The antenna and connector on the PCB have a reverse SMA connector.

Note: The EUT has a port that usually connects to an AC Adapter. This port is only to charge the internal batteries and plugging an AC Adapter into the port causes all circuitry except for the battery charge circuit to shut off. The battery charge circuit highest operating frequency is only 7.5 kHz and thus is exempt from FCC testing.

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



#### 4.1.1 Cable Construction and Termination

##### Cable 1

This is a 6 foot unshielded cable connecting the EUT to the AC Adapter. It has a power connector at the EUT end and is hard wired into the AC Adapter.

**Note:** The cable described above was not attached to the EUT during the testing. This is because the AC Adapter is only used to charge the internal batteries and causes the EUT to shut off all circuitry except for the battery charging circuit. The battery charging circuit's highest operating frequency is only 7.5 kHz and thus is exempt from FCC testing.



## 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

### 5.1 EUT and Accessory List

| EQUIPMENT                                      | MANUFACTURER        | MODEL NUMBER | SERIAL NUMBER | FCC ID     |
|------------------------------------------------|---------------------|--------------|---------------|------------|
| 900 MHz INDUSTRIAL<br>CONTROLLER - Tx<br>(EUT) | ROWE<br>ELECTRONICS | RE6900T      | N/A           | OOPRE6900T |
| AC ADAPTER                                     | CUI STACK           | DV-1250      | N/A           | N/A        |



## 5.2 EMI Test Equipment

| EQUIPMENT TYPE         | MANUFACTURER     | MODEL NUMBER | SERIAL NUMBER | CAL. DATE      | CAL. DUE DATE  |
|------------------------|------------------|--------------|---------------|----------------|----------------|
| Spectrum Analyzer      | Hewlett Packard  | 8566B        | 3638A08768    | Dec. 11, 1998  | Dec. 11, 1999  |
| Preamplifier           | Com Power        | PA-102       | 1017          | Jan. 16, 1999  | Jan. 16, 2000  |
| Quasi-Peak Adapter     | Hewlett Packard  | 85650A       | 2430A00424    | July 14, 1999  | July 14, 2000  |
| Biconical Antenna      | Com Power        | AB-100       | 1548          | Oct. 14, 1999  | Oct. 14, 2000  |
| Log Periodic Antenna   | Com Power        | AL-100       | 16039         | Oct. 14, 1999  | Oct. 14, 2000  |
| Turntable              | Com Power        | TT-100       | N/A           | N/A            | N/A            |
| Computer               | Hewlett Packard  | HP98561A     | 2522A05178    | N/A            | N/A            |
| Printer                | Hewlett Packard  | 2225A        | 2925S33268    | N/A            | N/A            |
| Plotter                | Hewlett Packard  | 7440A        | 8726K38417    | N/A            | N/A            |
| Microwave Preamplifier | Hewlett Packard  | 8449B        | 3008A008766   | Jan. 30, 1999  | Jan. 30, 2000  |
| Horn Antenna           | Antenna Research | DRG-118/A    | 1053          | Dec. 8, 1995   | N/A            |
| Loop Antenna           | Com-Power        | AL-130       | 25309         | April 13, 1999 | April 13, 2000 |



## 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 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 Hewlett Packard Microwave Preamplifier Model: 8449B was used for frequencies above 1 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 quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 1 Hz and slowing the sweep time to keep the amplitude reading calibrated. 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: 1992. 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 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.



## 7.2 Band Edge Plots of the Low and High Channels

Spectral plots of both the low and high channels were taken of the EUT to show that the emissions at the band edges (902 and 928 MHz) were attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in FCC Title 47, Subpart C, section 15.209, whichever is the lesser attenuation. Please see Appendix D for the spectral plots and data sheets.

The spectral plots were taken at a distance of 3 meters, using the PA-102 Preamplifier to boost the signal level of any potential emissions outside the band edges. The data sheets will show the readings at 902 MHz and 928 MHz corrected for factors.



## 8. CONCLUSIONS

The 900 MHz Industrial Controller - Tx Model: RE6900T meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205 and 15.249.





**APPENDIX A**

***MODIFICATIONS TO THE EUT***



## MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 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.

Modifications:

No modifications were made to the EUT.





**APPENDIX B**

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



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

USED FOR THE PRIMARY TEST

900 MHz Industrial Controller - Tx  
Model: RE6900T  
S/N: N/A

There were no additional models covered under this report.





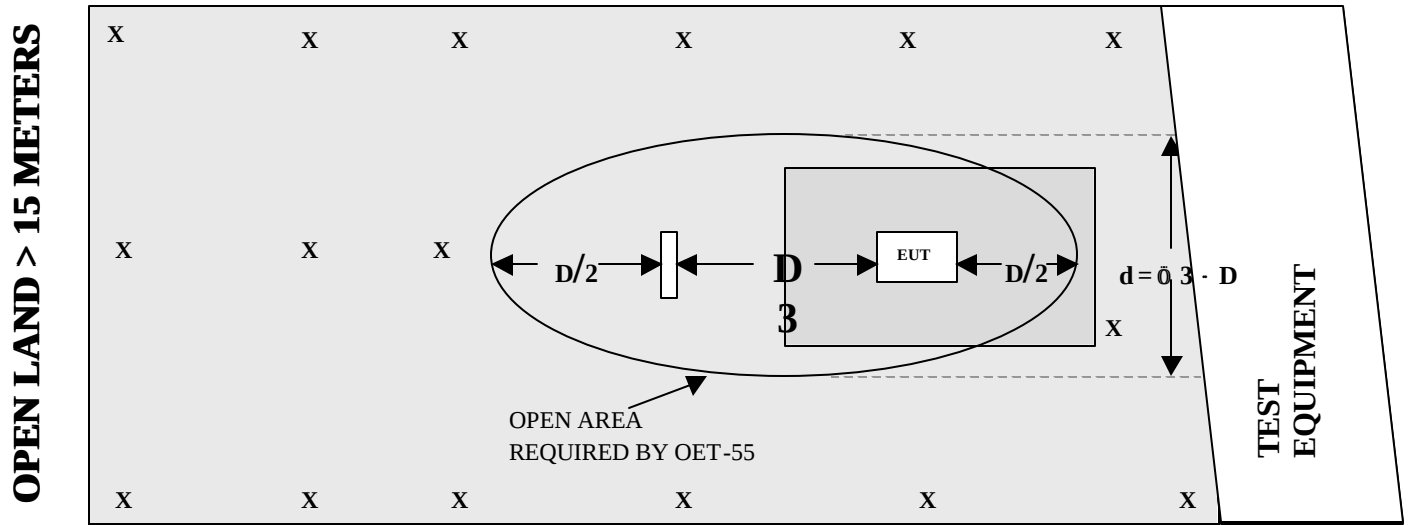
**APPENDIX C**

***DIAGRAMS, CHARTS AND PHOTOS***

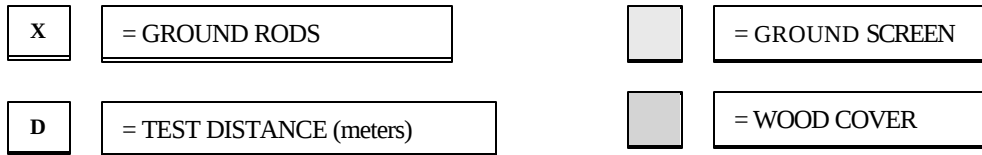


**FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE**

## OPEN LAND > 15 METERS



## OPEN LAND ≥ 15 METERS





**FRONT VIEW**

ROWE ELECTRONICS  
900 MHz INDUSTRIAL CONTROLLER - Tx  
MODEL: RE6900T  
FCC SUBPART C - RADIATED EMISSIONS – 11-11-99

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





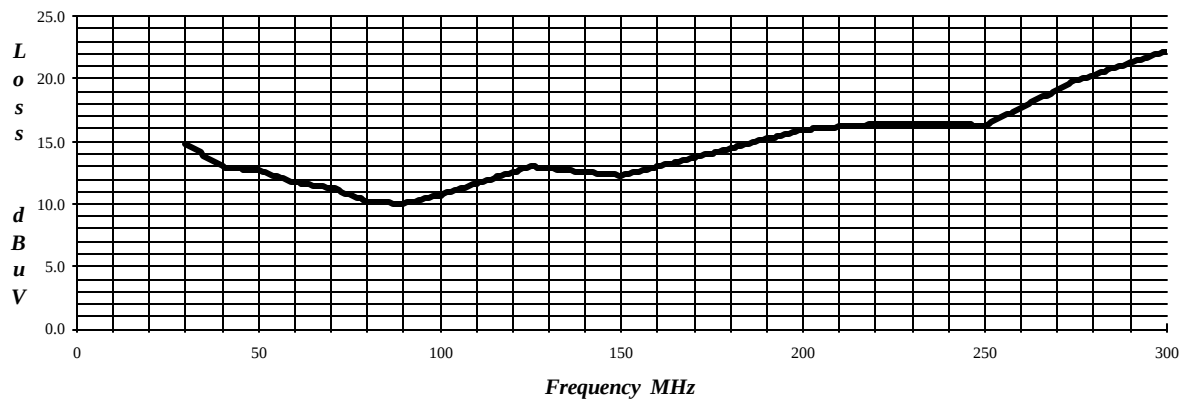
**REAR VIEW**

ROWE ELECTRONICS  
900 MHz INDUSTRIAL CONTROLLER - Tx  
MODEL: RE6900T  
FCC SUBPART C - RADIATED EMISSIONS – 11-11-99

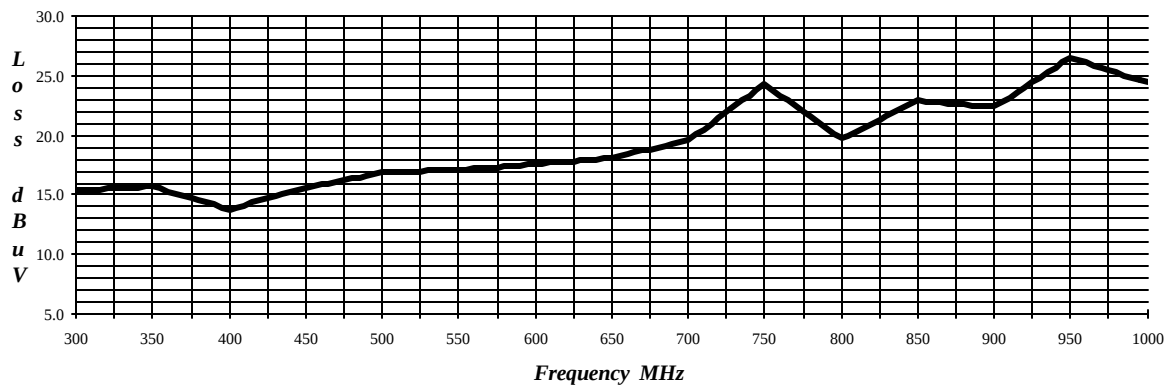
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



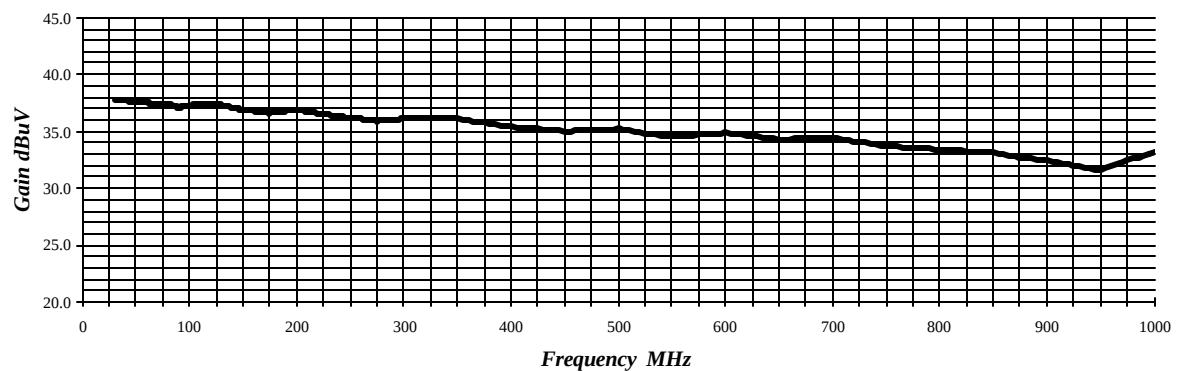
**LAB "D" BICONICAL ANTENNA AB-100 S/N 01548 Cal: 10-14-99**



**LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 16039 Cal: 10-14-99**



**PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017 Lab "D"**  
**Effective 1-16-99**



HEWLETT PACKARD 8449B

MICROWAVE PREAMPLIFIER

S/N: 3008A008766

CALIBRATION DATE: JANUARY 30, 1999

| FREQUENCY<br>(GHz) | FACTOR<br>(dB) | FREQUENCY<br>(GHz) | FACTOR<br>(dB) |
|--------------------|----------------|--------------------|----------------|
| 1.0                | 36.9           | 10.5               | 34.1           |
| 1.1                | 36.3           | 11.0               | 33.7           |
| 1.2                | 36.4           | 11.5               | 34.0           |
| 1.3                | 36.2           | 12.0               | 33.9           |
| 1.4                | 36.3           | 12.5               | 34.4           |
| 1.5                | 35.7           | 13.0               | 32.9           |
| 1.6                | 35.9           | 13.5               | 31.6           |
| 1.7                | 35.7           | 14.0               | 31.8           |
| 1.8                | 35.6           | 14.5               | 31.9           |
| 1.9                | 35.5           | 15.0               | 32.2           |
| 2.0                | 35.4           | 15.5               | 32.8           |
| 2.5                | 35.6           | 16.0               | 32.4           |
| 3.0                | 35.2           | 16.5               | 32.1           |
| 3.5                | 35.2           | 17.0               | 32.3           |
| 4.0                | 34.3           | 17.5               | 30.3           |
| 4.5                | 34.1           | 18.0               | 31.5           |
| 5.0                | 34.3           | 18.5               | 31.2           |
| 5.5                | 33.0           | 19.0               | 32.2           |
| 6.0                | 34.1           | 19.5               | 32.0           |
| 6.5                | 34.5           | 20.0               | 32.0           |
| 7.0                | 34.3           | 20.5               | 33.2           |
| 7.5                | 33.9           | 21.0               | 30.9           |
| 8.0                | 34.5           | 22.0               | 32.1           |
| 8.5                | 34.5           | 23.0               | 32.8           |
| 9.0                | 34.4           | 24.0               | 32.9           |
| 9.5                | 34.3           | 25.0               | 32.3           |
| 10.0               | 33.7           | 26.0               | 32.6           |



# E-FIELD ANTENNA FACTOR CALIBRATION

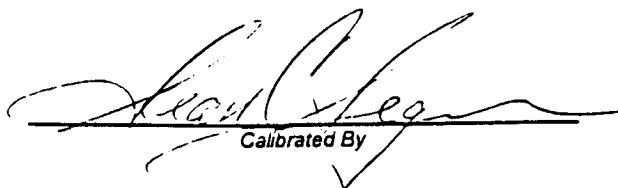
$$E(\text{dB V/m}) = V_o(\text{dB V}) + AFE(\text{dB/m})$$

Model number : DRG-118/A

| Frequency<br>GHz | AFE<br>dB/m | Gain<br>dBi |
|------------------|-------------|-------------|
| 1                | 22.3        | 8.0         |
| 2                | 26.7        | 9.5         |
| 3                | 29.7        | 10.1        |
| 4                | 29.5        | 12.8        |
| 5                | 32.3        | 12.0        |
| 6                | 32.4        | 13.4        |
| 7                | 36.1        | 11.0        |
| 8                | 37.4        | 10.9        |
| 9                | 36.8        | 12.5        |
| 10               | 39.5        | 10.7        |
| 11               | 39.6        | 11.5        |
| 12               | 39.8        | 12.0        |
| 13               | 39.7        | 12.8        |
| 14               | 41.8        | 11.3        |
| 15               | 41.9        | 11.9        |
| 16               | 38.1        | 16.3        |
| 17               | 41.0        | 13.9        |
| 18               | 46.5        | 8.9         |

Serial number : 1053  
Job number : 96-092  
Remarks : 3 meter calibration  
Standards : LPD-118/A, TE-1000

Temperature : 72° F  
Humidity : 56 %  
Traceability : A01887  
Date : December 08, 1995

  
Calibrated By

# Com-Power Corporation

(949) 587-9800

## Antenna Calibration

| Antenna Type:     |                    | Loop Antenna     |  |
|-------------------|--------------------|------------------|--|
| Model:            |                    | AL-130           |  |
| Serial Number:    |                    | 25309            |  |
| Calibration Date: |                    | 4/13/99          |  |
| Frequency<br>MHz  | Magnetic<br>(dB/m) | Electric<br>dB/m |  |
| 0.01              | -40.6              | 10.9             |  |
| 0.02              | -41.5              | 10.0             |  |
| 0.03              | -39.9              | 11.6             |  |
| 0.04              | -40.2              | 11.3             |  |
| 0.05              | -41.5              | 10.0             |  |
| 0.06              | -41.1              | 10.4             |  |
| 0.07              | -41.3              | 10.2             |  |
| 0.08              | -41.6              | 9.9              |  |
| 0.09              | -41.7              | 9.8              |  |
| 0.1               | -41.7              | 9.8              |  |
| 0.2               | -44.0              | 7.5              |  |
| 0.3               | -41.6              | 9.9              |  |
| 0.4               | -41.6              | 9.9              |  |
| 0.5               | -41.7              | 9.8              |  |
| 0.6               | -41.5              | 10.0             |  |
| 0.7               | -41.4              | 10.1             |  |
| 0.8               | -41.5              | 10.0             |  |
| 0.9               | -41.6              | 9.9              |  |
| 1                 | -41.2              | 10.3             |  |
| 2                 | -40.5              | 11.0             |  |
| 3                 | -40.8              | 10.7             |  |
| 4                 | -41.0              | 10.5             |  |
| 5                 | -40.5              | 11.0             |  |
| 6                 | -40.5              | 11.0             |  |
| 7                 | -40.7              | 10.8             |  |
| 8                 | -40.8              | 10.7             |  |
| 9                 | -40.1              | 11.4             |  |
| 10                | -40.4              | 11.1             |  |
| 12                | -41.0              | 10.5             |  |
| 14                | -42.1              | 9.4              |  |
| 15                | -42.3              | 9.2              |  |
| 16                | -42.7              | 8.8              |  |
| 18                | -41.0              | 10.5             |  |
| 20                | -41.1              | 10.4             |  |
| 25                | -43.4              | 8.1              |  |
| 30                | -45.3              | 6.2              |  |

Trans. Antenna Height

2 meter

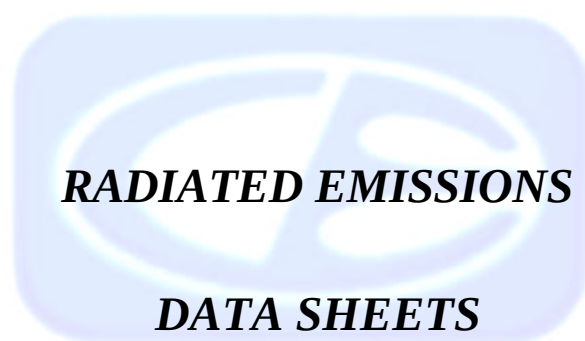
Receiving Antenna Height

2 meter



## ***DATA SHEETS***







Test location: Compatible Electronics

Customer : ROWE ELECTRONICS

Date : 11/11/1999

Manufacturer : ROWE ELECTRONICS

Time : 14.10

EUT name : 900 MHz INDUSTRIAL CONTROLLER - TX Model: RE6900T

Specification: Fcc\_B Test distance: 3.0 mtrs Lab: D

Distance correction factor( $20 \cdot \log(\text{test}/\text{spec})$ ) : 0.00

Test Mode : TEMPERATURE 65 DEGREES F.

RELATIVE HUMIDITY 75%

TESTED BY: Kyle Fujimoto  
KYLE FUJIMOTO

NO SPURIOUS EMISSIONS FOUND FOR THE TRANSMITTER  
FROM 9 kHz TO 9300 MHz IN EITHER POLARIZATION

# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |  |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|--|
| 903.3000         | 56.3                      | 56.2                                  | A                             | H                             | 1.0                         | 90                     | X                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 83.9                | -10.1                     | 94.0     |  |
| 903.3000         | 49.9                      | 49.8                                  | A                             | H                             | 1.0                         | 180                    | Y                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 77.5                | -16.5                     | 94.0     |  |
| 903.3000         | 50.8                      | 50.7                                  | A                             | H                             | 1.5                         | 90                     | Z                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 78.4                | -15.6                     | 94.0     |  |
| 903.3000         | 50.2                      | 50.1                                  | A                             | V                             | 2.5                         | 90                     | X                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 77.8                | -16.2                     | 94.0     |  |
| 903.3000         | 51.0                      | 50.9                                  | A                             | V                             | 1.0                         | 0                      | Y                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 78.6                | -15.4                     | 94.0     |  |
| 903.3000         | 56.7                      | 56.6                                  | A                             | V                             | 1.5                         | 90                     | Z                    | LOW                       | 22.7                  | 5.0                       | 0.0                               | 84.3                | -9.7                      | 94.0     |  |
| 912.4000         | 54.2                      | 54.1                                  | A                             | H                             | 1.0                         | 90                     | X                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 82.4                | -11.6                     | 94.0     |  |
| 912.4000         | 47.5                      | 47.4                                  | A                             | H                             | 2.0                         | 180                    | Y                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 75.7                | -18.3                     | 94.0     |  |
| 912.4000         | 53.7                      | 53.6                                  | A                             | H                             | 1.5                         | 270                    | Z                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 81.9                | -12.1                     | 94.0     |  |
| 912.4000         | 46.3                      | 46.2                                  | A                             | V                             | 1.0                         | 90                     | X                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 74.5                | -19.5                     | 94.0     |  |
| 912.4000         | 54.8                      | 54.7                                  | A                             | V                             | 1.0                         | 0                      | Y                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 83.0                | -11.0                     | 94.0     |  |
| 912.4000         | 52.7                      | 52.6                                  | A                             | V                             | 1.5                         | 180                    | Z                    | MID                       | 23.4                  | 4.9                       | 0.0                               | 80.9                | -13.1                     | 94.0     |  |
| 921.3000         | 47.0                      | 46.9                                  | A                             | H                             | 1.5                         | 180                    | X                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 75.9                | -18.1                     | 94.0     |  |
| 921.3000         | 46.7                      | 46.6                                  | A                             | H                             | 2.0                         | 0                      | Y                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 75.6                | -18.4                     | 94.0     |  |
| 921.3000         | 44.1                      | 44.0                                  | A                             | H                             | 1.5                         | 270                    | Z                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 73.0                | -21.0                     | 94.0     |  |
| 921.3000         | 45.4                      | 45.3                                  | A                             | V                             | 1.0                         | 270                    | X                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 74.3                | -19.7                     | 94.0     |  |
| 921.3000         | 51.0                      | 50.9                                  | A                             | V                             | 1.0                         | 0                      | Y                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 79.9                | -14.1                     | 94.0     |  |
| 921.3000         | 45.5                      | 45.4                                  | A                             | V                             | 1.0                         | 270                    | Z                    | HI                        | 24.2                  | 4.8                       | 0.0                               | 74.4                | -19.6                     | 94.0     |  |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 1806.6000        | 57.2                      | 55.8 A                                | H                             | 1.0                           | 270                         | X                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 48.2                              | -5.8                | 54.0                      |          |
| 1806.6000        | 58.9                      | 58.2 A                                | H                             | 1.5                           | 270                         | Y                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 50.6                              | -3.4                | 54.0                      |          |
| 1806.6000        | 54.1                      | 52.5 A                                | H                             | 3.0                           | 180                         | Z                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 44.9                              | -9.1                | 54.0                      |          |
| 1806.6000        | 56.8                      | 55.7 A                                | V                             | 1.0                           | 90                          | X                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 48.1                              | -5.9                | 54.0                      |          |
| 1806.6000        | 59.0                      | 58.2 A                                | V                             | 1.0                           | 90                          | Y                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 50.6                              | -3.4                | 54.0                      |          |
| 1806.6000        | 58.2                      | 57.3 A                                | V                             | 1.0                           | 90                          | Z                      | LOW                  | 24.5                      | 3.5                   | 35.6                      | 49.7                              | -4.3                | 54.0                      |          |
| 1824.8000        | 58.5                      | 57.7 A                                | H                             | 1.5                           | 0                           | X                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 50.1                              | -3.9                | 54.0                      |          |
| 1824.8000        | 57.9                      | 57.1 A                                | H                             | 1.5                           | 0                           | Y                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 49.5                              | -4.5                | 54.0                      |          |
| 1824.8000        | 57.5                      | 56.4 A                                | H                             | 2.5                           | 180                         | Z                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 48.8                              | -5.2                | 54.0                      |          |
| 1824.8000        | 60.8                      | 59.9 A                                | V                             | 1.0                           | 0                           | X                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 52.3                              | -1.7                | 54.0                      |          |
| 1824.8000        | 60.8                      | 60.1 A                                | V                             | 2.0                           | 0                           | Y                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 52.5                              | -1.5                | 54.0                      |          |
| 1824.8000        | 61.2                      | 60.6 A                                | V                             | 1.0                           | 180                         | Z                      | MID                  | 24.5                      | 3.5                   | 35.6                      | 53.0                              | -1.0                | 54.0                      |          |
| 1842.6000        | 56.7                      | 55.3 A                                | H                             | 2.0                           | 180                         | X                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 47.7                              | -6.3                | 54.0                      |          |
| 1842.6000        | 60.8                      | 60.2 A                                | H                             | 2.0                           | 180                         | Y                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 52.6                              | -1.4                | 54.0                      |          |
| 1842.6000        | 58.6                      | 57.9 A                                | H                             | 1.0                           | 180                         | Z                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 50.3                              | -3.7                | 54.0                      |          |
| 1842.6000        | 60.4                      | 59.7 A                                | V                             | 1.0                           | 180                         | X                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 52.1                              | -1.9                | 54.0                      |          |
| 1842.6000        | 59.6                      | 58.6 A                                | V                             | 1.5                           | 90                          | Y                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 51.0                              | -3.0                | 54.0                      |          |
| 1842.6000        | 59.5                      | 57.7 A                                | V                             | 1.0                           | 0                           | Z                      | HI                   | 24.5                      | 3.5                   | 35.6                      | 50.1                              | -3.9                | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING



# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 2709.9000        | 46.7                      | 40.8 A                                | H                             | 1.5                           | 90                          | X                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 37.9                              | -16.1               | 54.0                      |          |
| 2709.9000        | 50.0                      | 47.3 A                                | H                             | 2.5                           | 90                          | Y                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 44.4                              | -9.6                | 54.0                      |          |
| 2709.9000        | 48.7                      | 45.1 A                                | H                             | 1.0                           | 90                          | Z                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 42.2                              | -11.8               | 54.0                      |          |
| 2709.9000        | 47.3                      | 42.2 A                                | V                             | 1.0                           | 90                          | X                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 39.3                              | -14.7               | 54.0                      |          |
| 2709.9000        | 46.4                      | 41.1 A                                | V                             | 2.5                           | 90                          | Y                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 38.2                              | -15.8               | 54.0                      |          |
| 2709.9000        | 50.9                      | 48.3 A                                | V                             | 1.0                           | 90                          | Z                      | LOW                  | 28.2                      | 4.5                   | 35.6                      | 45.4                              | -8.6                | 54.0                      |          |
| 2737.2000        | 54.1                      | 51.1 A                                | H                             | 1.0                           | 0                           | X                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 48.2                              | -5.8                | 54.0                      |          |
| 2737.2000        | 52.5                      | 50.1 A                                | H                             | 1.5                           | 0                           | Y                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 47.2                              | -6.8                | 54.0                      |          |
| 2737.2000        | 52.7                      | 50.0 A                                | H                             | 2.0                           | 180                         | Z                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 47.1                              | -6.9                | 54.0                      |          |
| 2737.2000        | 53.4                      | 51.3 A                                | V                             | 1.0                           | 0                           | X                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 48.4                              | -5.6                | 54.0                      |          |
| 2737.2000        | 54.2                      | 52.0 A                                | V                             | 1.5                           | 180                         | Y                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 49.1                              | -4.9                | 54.0                      |          |
| 2737.2000        | 54.4                      | 51.6 A                                | V                             | 2.0                           | 180                         | Z                      | MID                  | 28.2                      | 4.5                   | 35.6                      | 48.7                              | -5.3                | 54.0                      |          |
| 2763.9000        | 48.8                      | 45.1 A                                | H                             | 3.0                           | 90                          | X                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 44.2                              | -9.8                | 54.0                      |          |
| 2763.9000        | 53.8                      | 52.5 A                                | H                             | 1.0                           | 180                         | Y                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 51.6                              | -2.4                | 54.0                      |          |
| 2763.9000        | 46.9                      | 41.3 A                                | H                             | 1.0                           | 90                          | Z                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 40.4                              | -13.6               | 54.0                      |          |
| 2763.9000        | 47.9                      | 44.0 A                                | V                             | 1.0                           | 90                          | X                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 43.1                              | -10.9               | 54.0                      |          |
| 2763.9000        | 50.5                      | 47.4 A                                | V                             | 1.0                           | 90                          | Y                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 46.5                              | -7.5                | 54.0                      |          |
| 2763.9000        | 49.8                      | 46.1 A                                | V                             | 1.0                           | 180                         | Z                      | HI                   | 29.7                      | 4.6                   | 35.2                      | 45.2                              | -8.8                | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 3613.2000        | 49.6                      | 46.7 A                                | H                             | 2.0                           | 90                          | X                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 46.1                              | -7.9                | 54.0                      |          |
| 3613.2000        | 49.8                      | 47.3 A                                | H                             | 2.0                           | 180                         | Y                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 46.7                              | -7.3                | 54.0                      |          |
| 3613.2000        | 52.6                      | 50.7 A                                | H                             | 1.5                           | 90                          | Z                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 50.1                              | -3.9                | 54.0                      |          |
| 3613.2000        | 48.1                      | 44.3 A                                | V                             | 1.5                           | 180                         | X                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 43.7                              | -10.3               | 54.0                      |          |
| 3613.2000        | 48.3                      | 43.7 A                                | V                             | 1.5                           | 180                         | Y                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 43.1                              | -10.9               | 54.0                      |          |
| 3613.2000        | 48.5                      | 45.2 A                                | V                             | 1.5                           | 0                           | Z                      | LOW                  | 29.6                      | 5.0                   | 35.2                      | 44.6                              | -9.4                | 54.0                      |          |
| 3649.6000        | 54.0                      | 51.8 A                                | H                             | 2.0                           | 90                          | X                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 51.2                              | -2.8                | 54.0                      |          |
| 3649.6000        | 49.6                      | 45.0 A                                | H                             | 1.0                           | 90                          | Y                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 44.4                              | -9.6                | 54.0                      |          |
| 3649.6000        | 52.9                      | 50.2 A                                | H                             | 2.0                           | 90                          | Z                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 49.6                              | -4.4                | 54.0                      |          |
| 3649.6000        | 52.1                      | 49.1 A                                | V                             | 2.0                           | 180                         | X                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 48.5                              | -5.5                | 54.0                      |          |
| 3649.6000        | 54.6                      | 51.4 A                                | V                             | 2.0                           | 0                           | Y                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 50.8                              | -3.2                | 54.0                      |          |
| 3649.6000        | 52.6                      | 49.9 A                                | V                             | 2.0                           | 180                         | Z                      | MID                  | 29.6                      | 5.0                   | 35.2                      | 49.3                              | -4.7                | 54.0                      |          |
| 3685.2000        | 51.6                      | 49.7 A                                | H                             | 3.0                           | 90                          | X                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 49.1                              | -4.9                | 54.0                      |          |
| 3685.2000        | 52.3                      | 49.7 A                                | H                             | 1.0                           | 0                           | Y                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 49.1                              | -4.9                | 54.0                      |          |
| 3685.2000        | 48.9                      | 45.7 A                                | H                             | 1.0                           | 180                         | Z                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 45.1                              | -8.9                | 54.0                      |          |
| 3685.2000        | 49.9                      | 47.3 A                                | V                             | 1.0                           | 0                           | X                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 46.7                              | -7.3                | 54.0                      |          |
| 3685.2000        | 54.6                      | 53.3 A                                | V                             | 1.5                           | 0                           | Y                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 52.7                              | -1.3                | 54.0                      |          |
| 3685.2000        | 50.1                      | 47.7 A                                | V                             | 1.0                           | 0                           | Z                      | HI                   | 29.6                      | 5.0                   | 35.2                      | 47.1                              | -6.9                | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 4516.5000        | 48.9                      | 45.5 A                                | H                             | 1.5                           | 90                          | X                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 47.9                              | -6.1                | 54.0                      |          |
| 4516.5000        | 50.8                      | 48.1 A                                | H                             | 1.5                           | 90                          | Y                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 50.5                              | -3.5                | 54.0                      |          |
| 4516.5000        | 49.1                      | 45.4 A                                | V                             | 1.5                           | 90                          | Z                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 47.8                              | -6.2                | 54.0                      |          |
| 4516.5000        | 50.8                      | 48.1 A                                | V                             | 1.5                           | 90                          | X                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 50.5                              | -3.5                | 54.0                      |          |
| 4516.5000        | 49.1                      | 45.4 A                                | V                             | 1.5                           | 90                          | Y                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 47.8                              | -6.2                | 54.0                      |          |
| 4516.5000        | 52.3                      | 50.1 A                                | V                             | 1.5                           | 90                          | Z                      | LOW                  | 30.9                      | 5.6                   | 34.1                      | 52.5                              | -1.5                | 54.0                      |          |
| 4562.0000        | 46.7                      | 41.1 A                                | H                             | 2.5                           | 0                           | X                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 43.5                              | -10.5               | 54.0                      |          |
| 4562.0000        | 50.1                      | 45.1 A                                | H                             | 1.0                           | 90                          | Y                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 47.5                              | -6.5                | 54.0                      |          |
| 4562.0000        | 51.3                      | 46.6 A                                | H                             | 2.5                           | 90                          | Z                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 49.0                              | -5.0                | 54.0                      |          |
| 4562.0000        | 52.5                      | 48.5 A                                | V                             | 1.5                           | 0                           | X                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 50.9                              | -3.1                | 54.0                      |          |
| 4562.0000        | 51.9                      | 48.8 A                                | V                             | 2.0                           | 180                         | Y                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 51.2                              | -2.8                | 54.0                      |          |
| 4562.0000        | 50.5                      | 46.2 A                                | V                             | 2.5                           | 0                           | Z                      | MID                  | 30.9                      | 5.6                   | 34.1                      | 48.6                              | -5.4                | 54.0                      |          |
| 4606.5000        | 47.4                      | 43.4 A                                | H                             | 2.0                           | 90                          | X                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 45.8                              | -8.2                | 54.0                      |          |
| 4606.5000        | 49.4                      | 46.7 A                                | H                             | 1.0                           | 90                          | Y                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 49.1                              | -4.9                | 54.0                      |          |
| 4606.5000        | 46.8                      | 41.8 A                                | H                             | 2.0                           | 90                          | Z                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 44.2                              | -9.8                | 54.0                      |          |
| 4606.5000        | 48.1                      | 45.0 A                                | V                             | 2.0                           | 90                          | X                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 47.4                              | -6.6                | 54.0                      |          |
| 4606.5000        | 46.7                      | 42.3 A                                | V                             | 1.0                           | 180                         | Y                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 44.7                              | -9.3                | 54.0                      |          |
| 4606.5000        | 46.5                      | 41.3 A                                | V                             | 1.0                           | 180                         | Z                      | HI                   | 30.9                      | 5.6                   | 34.1                      | 43.7                              | -10.3               | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING



# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)



COMPATIBLE  
ELECTRONICS

|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 5419.8000        | 44.5                      | 38.8 A                                | H                             | 2.0                           | 90                          | X                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 44.2                              | -9.8                | 54.0                      |          |
| 5419.8000        | 48.4                      | 44.4 A                                | H                             | 2.0                           | 90                          | Y                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 49.8                              | -4.2                | 54.0                      |          |
| 5419.8000        | 44.6                      | 39.8 A                                | H                             | 1.0                           | 180                         | Z                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 45.2                              | -8.8                | 54.0                      |          |
| 5419.8000        | 47.4                      | 43.2 A                                | V                             | 1.5                           | 90                          | X                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 48.6                              | -5.4                | 54.0                      |          |
| 5419.8000        | 44.9                      | 38.3 A                                | V                             | 2.0                           | 180                         | Y                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 43.7                              | -10.3               | 54.0                      |          |
| 5419.8000        | 47.0                      | 42.6 A                                | V                             | 1.0                           | 180                         | Z                      | LOW                  | 32.4                      | 6.0                   | 33.0                      | 48.0                              | -6.0                | 54.0                      |          |
| 5474.4000        | 45.0                      | 37.1 A                                | H                             | 1.0                           | 90                          | X                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 42.5                              | -11.5               | 54.0                      |          |
| 5474.4000        | 43.6                      | 39.6 A                                | H                             | 1.0                           | 270                         | Y                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 45.0                              | -9.0                | 54.0                      |          |
| 5474.4000        | 46.9                      | 41.3 A                                | H                             | 2.0                           | 0                           | Z                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 46.7                              | -7.3                | 54.0                      |          |
| 5474.4000        | 46.4                      | 39.3 A                                | V                             | 2.0                           | 90                          | X                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 44.7                              | -9.3                | 54.0                      |          |
| 5474.4000        | 46.5                      | 37.6 A                                | V                             | 2.0                           | 0                           | Y                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 43.0                              | -11.0               | 54.0                      |          |
| 5474.4000        | 45.5                      | 36.9 A                                | V                             | 2.5                           | 270                         | Z                      | MID                  | 32.4                      | 6.0                   | 33.0                      | 42.3                              | -11.7               | 54.0                      |          |
| 5527.8000        | 45.2                      | 39.2 A                                | H                             | 2.5                           | 90                          | X                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 44.6                              | -9.4                | 54.0                      |          |
| 5527.8000        | 45.3                      | 39.0 A                                | H                             | 2.5                           | 90                          | Y                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 44.4                              | -9.6                | 54.0                      |          |
| 5527.8000        | 46.0                      | 39.1 A                                | H                             | 2.5                           | 90                          | Z                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 44.5                              | -9.5                | 54.0                      |          |
| 5527.8000        | 42.2                      | 35.1 A                                | V                             | 2.0                           | 90                          | X                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 40.5                              | -13.5               | 54.0                      |          |
| 5527.8000        | 40.3                      | 33.6 A                                | V                             | 1.0                           | 180                         | Y                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 39.0                              | -15.0               | 54.0                      |          |
| 5527.8000        | 45.4                      | 38.3 A                                | H                             | 1.0                           | 180                         | Z                      | HI                   | 32.4                      | 6.0                   | 33.0                      | 43.7                              | -10.3               | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN  
 \*\* DELTA = SPEC LIMIT - CORRECTED READING

# RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)



COMPATIBLE  
ELECTRONICS

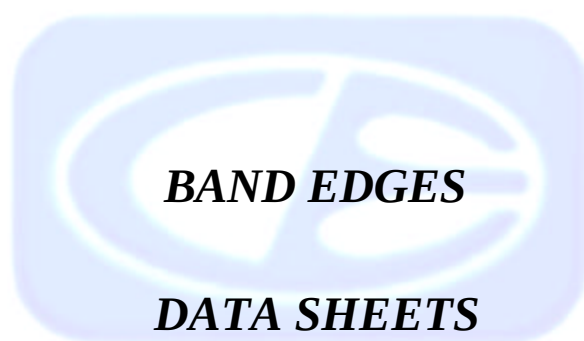
|               |                                    |             |          |
|---------------|------------------------------------|-------------|----------|
| COMPANY       | ROWE ELECTRONICS                   | DATE        | 11/11/99 |
| EUT           | 900 MHz INDUSTRIAL CONTROLLER - TX | DUTY CYCLE  | N/A      |
| MODEL         | RE6900T                            | PEAK TO AVG | N/A      |
| S/N           | N/A                                | TEST DIST.  | 3 METERS |
| TEST ENGINEER | Kyle Fujimoto                      | LAB         | D        |

| Frequency<br>MHz | Peak<br>Reading<br>(dBuV) | Average (A)<br>or Quasi-<br>Peak (QP) | Antenna<br>Polar.<br>(V or H) | Antenna<br>Height<br>(meters) | EUT<br>Azimuth<br>(degrees) | EUT<br>Axis<br>(X,Y,Z) | EUT<br>Tx<br>Channel | Antenna<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Amplifier<br>Gain<br>(dB) | *Corrected<br>Reading<br>(dBuV/m) | Delta<br>**<br>(dB) | Spec<br>Limit<br>(dBuV/m) | Comments |
|------------------|---------------------------|---------------------------------------|-------------------------------|-------------------------------|-----------------------------|------------------------|----------------------|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------------|----------|
| 6323.1000        | 43.8                      | 36.6 A                                | H                             | 1.0                           | 0                           | X                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 43.3                              | -10.7               | 54.0                      |          |
| 6323.1000        | 43.3                      | 35.3 A                                | H                             | 1.0                           | 180                         | Y                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 42.0                              | -12.0               | 54.0                      |          |
| 6323.1000        | 43.6                      | 35.9 A                                | H                             | 1.0                           | 90                          | Z                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 42.6                              | -11.4               | 54.0                      |          |
| 6323.1000        | 43.7                      | 36.9 A                                | V                             | 1.0                           | 0                           | X                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 43.6                              | -10.4               | 54.0                      |          |
| 6323.1000        | 43.1                      | 33.8 A                                | V                             | 1.0                           | 180                         | Y                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 40.5                              | -13.5               | 54.0                      |          |
| 6323.1000        | 44.0                      | 36.6 A                                | V                             | 1.0                           | 180                         | Z                      | LOW                  | 34.3                      | 6.9                   | 34.5                      | 43.3                              | -10.7               | 54.0                      |          |
| 6386.8000        | 42.0                      | 33.2 A                                | H                             | 1.5                           | 0                           | X                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 39.9                              | -14.1               | 54.0                      |          |
| 6386.8000        | 40.1                      | 31.3 A                                | H                             | 1.0                           | 90                          | X                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 38.0                              | -16.0               | 54.0                      |          |
| 6386.8000        | 44.0                      | 33.9 A                                | H                             | 2.0                           | 0                           | X                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 40.6                              | -13.4               | 54.0                      |          |
| 6386.8000        | 45.4                      | 35.6 A                                | V                             | 2.0                           | 180                         | X                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 42.3                              | -11.7               | 54.0                      |          |
| 6386.8000        | 44.0                      | 33.6 A                                | V                             | 2.0                           | 0                           | Y                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 40.3                              | -13.7               | 54.0                      |          |
| 6386.8000        | 43.9                      | 33.8 A                                | V                             | 2.5                           | 180                         | Z                      | MID                  | 34.3                      | 6.9                   | 34.5                      | 40.5                              | -13.5               | 54.0                      |          |
| 6449.1000        | 41.0                      | 36.4 A                                | H                             | 1.5                           | 180                         | X                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 43.1                              | -10.9               | 54.0                      |          |
| 6449.1000        | 40.2                      | 33.3 A                                | H                             | 1.0                           | 180                         | Y                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 40.0                              | -14.0               | 54.0                      |          |
| 6449.1000        | 40.3                      | 32.5 A                                | H                             | 1.0                           | 180                         | Z                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 39.2                              | -14.8               | 54.0                      |          |
| 6449.1000        | 42.7                      | 31.6 A                                | V                             | 1.0                           | 90                          | X                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 38.3                              | -15.7               | 54.0                      |          |
| 6449.1000        | 40.0                      | 32.3 A                                | V                             | 1.0                           | 90                          | Y                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 39.0                              | -15.0               | 54.0                      |          |
| 6449.1000        | 41.9                      | 34.3 A                                | H                             | 1.0                           | 180                         | Z                      | HI                   | 34.3                      | 6.9                   | 34.5                      | 41.0                              | -13.0               | 54.0                      |          |

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

Note: No Harmonics Nor Emissions found after the  
7th Harmonic



BAND EDGE OF LOW CHANNEL  
REF 100.0 dB $\mu$ V ATTEN 10 dB

MKR 902.008 MHz  
43.90 dB $\mu$ V

hp  
10 dB/

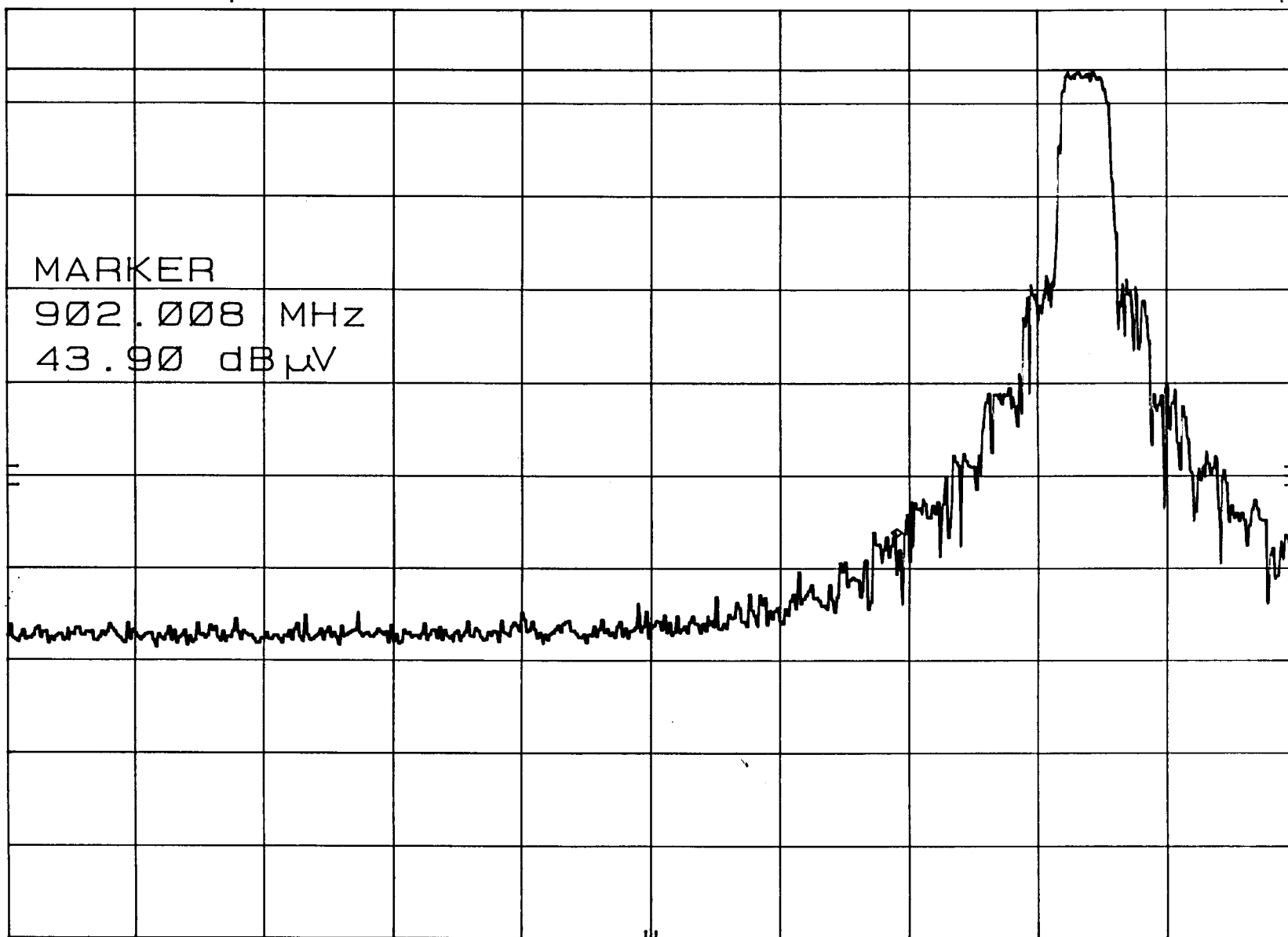
DL  
93.6  
dB $\mu$ V

MARKER  
902.008 MHz  
43.90 dB $\mu$ V

START 895.119 MHz  
RES BW 1 MHz

VBW 1 MHz

STOP 905.118 MHz  
SWP 20 msec

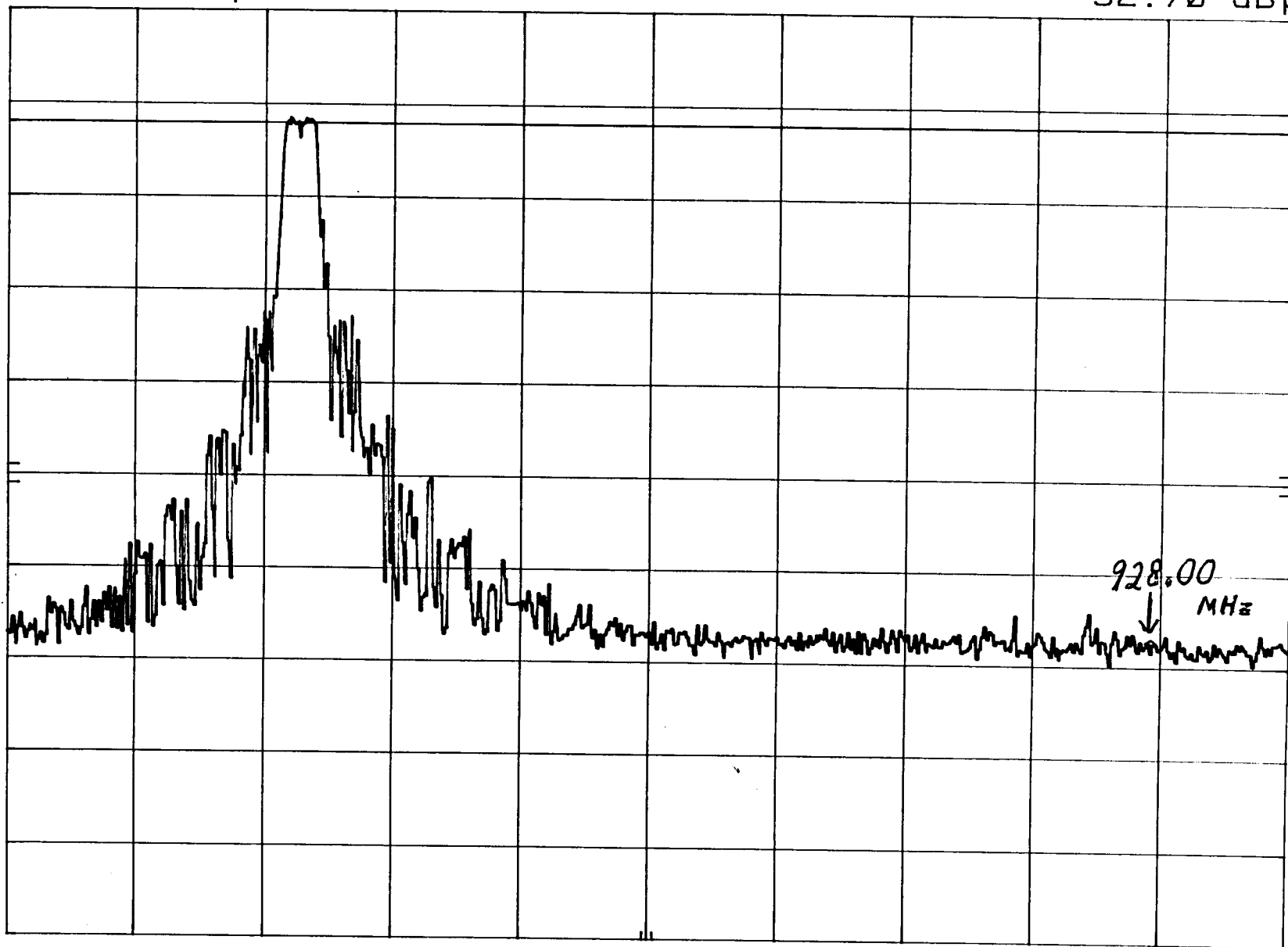


BAND EDGE OF HIGH CHANNEL  
REF 100.0 dB $\mu$ V ATTEN 10 dB

MKR 928.00 MHz  
32.70 dB $\mu$ V

hp  
10 dB/

DL  
88.0  
dB $\mu$ V



START 919.00 MHz

RES BW 1 MHz

VBW 1 MHz

STOP 929.10 MHz  
SWP 20 msec

# COMPATIBLE ELECTRONICS

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# COMPATIBLE ELECTRONICS

# COMPATIBLE ELECTRONICS